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A SENIOR'S HOME

DESIGNS FOR INDEPENDENT LIVING

Alberta
MUNICIPAL AFFAIRS
Innovative Housing Grants Program

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A SENIOR'S HOME

DESIGNS FOR INDEPENDENT LIVING

May 1985

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The views and conclusions expressed and the recommendations made in this report are entirely those of the authors and should not be construed as expressing the opinions of Alberta Municipal Affairs.

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FOREWORD

The project documented in this report received funding under the Innovative Housing Grants Program of the Alberta Department of Housing. In May, 1986 the Alberta Department of Housing was amalgamated with Alberta Municipal Affairs which is now responsible for issuing this report.

The Innovative Housing Grants Program is intended to encourage and assist housing research and development which will reduce housing costs, improve the quality and performance of dwelling units and subdivisions, or increase the long term viability and competitiveness of Alberta's housing industry.

The Program offers assistance to builders, developers, consulting firms, professionals, industry groups, building products manufacturers, municipal governments, educational institutions, non-profit groups and individuals. At this time, priority areas for investigation include building design, construction technology, energy conservation, site and subdivision design, site servicing technology, residential building product development or improvement and information technology.

As the type of project and level of resources vary from applicant to applicant, the resulting documents are also varied. Comments and suggestions on this report are welcome. Please send comments or requests for further information to:

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INTRODUCTION

There has been considerable debate as to whether older persons' housing needs are any different from those of young people. The concensus appears to be that the needs of both groups require considerably more design effort, particularily to reflect the additional requirements of elderly people due to a retirement lifestyle and increasing physical disabilities. The young are physically more adaptable to conventional static designs; therefore, it is for older people that the need is greatest.

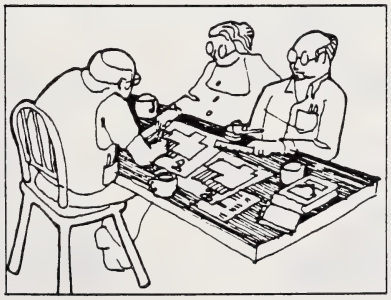
Many recent reports and studies have made recommendations regarding the special physical and social requirements that should be taken into account when designing suitable homes for people over 50 years of age. Further to this, recent surveys have indicated that there is a predominant desire by many seniors to live in a small single detached home, suited to their needs and owned by them. The absence of suitable independent homes has forced many seniors to remain in unsuitable houses or move to undesired accommodation. Consequently, the need and direction for this project arises from a number of sources including the Alberta Council on Aging, which recommends,

> "Individuals and organizations must pick up the initiative to develop the facilities and the alternate types of independent living and sheltered living that are needed."

The objective of this report is to provide guidelines and prototypical designs which are suitable for the development of senior's housing.

The study was not a definitive literature search nor a complex statistical survey analysis. Rather, the design requirements that follow are a synthesis of ideas and comments from written sources, our own experience, and those individuals or organizations who are familiar with the housing needs of the elderly. This list of requirements is by no means complete and we envision that persons using this report will add to their knowledge as this field of study evolves.

Originally we thought that this investigation should be directed only toward people over 65 years of age. However, it became apparent that the age at which people often make a housing move is in the preretirement years. Therefore, we are attempting to address the housing needs of all those people over the age of 50.



While many of the features recommended in this study do not apply to all people, one may find that with increasing age and/or physical disability, these features will become more important. The existence of these features may also be important to enable less able friends to have easy access to one's home while visiting. As well, we perceive that some of the features will not be installed initially for younger or more physically able persons; however, the home must be built to enable suitable and easy changes at a later date.

Some people will note that the house plans in this booklet are not entirely suitable for them. This is understandable as it was never our intention, nor would it be possible, to design homes that suit everyone. More importantly, these plans are intended to illustrate various suitable features that can be incorporated into future housing for older people. The housing illustrated here is intended to stimulate interest in the possibilities available. Builders and designers should also be ready with various options for owners, and designs should be flexible to allow for incorporating individual needs and preferences.

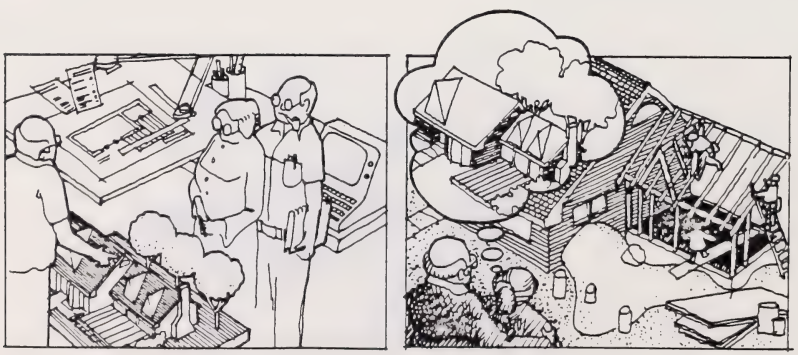
Although we are focusing on single and semi-detached homes, most of the design features contained in this booklet can be incorporated into all forms of housing for persons over 50. Builders, designers, and prospective purchasers or renters will find this information useful in choosing suitable housing.

The successful development of this housing would:

1) enable more older people to remain independent in suitable and desired forms of housing;

2) alleviate, in part, the Government's financial assistance for future seniors housing; and

3) stimulate the building of homes for this special group of people, thereby aiding the construction industry.



GENERAL RECOMMENDATIONS

Safety

The average home can be a dangerous environment and the scene of many accidents. While accidents are attributed to poor design (8%) and faulty maintenance (25%) the remaining 67% result from the human factor. Naturally, carelessness causes accidents; however, many accidents result from mental or physical causes. In our older population, worry, temper, stress, muddle and depressions can often lead to mental fatigue which in turn leads to carelessness. Failing sight and hearing, impaired sense of smell, and lack of foot sensation along with the more disabling conditions of disease, dizziness, and faintness also contribute to human factor accidents.

The aim of designing for safety is not merely to prevent accidents by the use of elaborate precautions and gadgets. It is to prevent the strain which leads to accidents long before they happen, by providing an environment in tune with human beings and their activities.

Accidents often happen when people get up at night; they may not be properly awake. Seniors especially, suffer from a loss of direction or giddiness when they first wake up.

Most of the safety recommendations are included in sections of the report containing recommendations on the exterior and interior of the units. The following are a few general safety proposals.

1. Furniture should be arranged so that one can easily access storage, windows, and frequently used furniture.

2. Install simple operating fire extinguishers at convenient and critical locations.

3. Telephones should be wall mounted to save people from tripping over the cords.

4. Use ground level exits to increase exiting safety.

5. Consider emergency call bells between homes to give safety and security to homeowners and allow them to remain independent longer.

Security

The utilization of appropriate security features in a home will increase its security. Intruders are usually deterred by security measures. In addition, elderly people should be aware that they are less likely to suffer from criminal activity than the general public, though in the case of assault the consequences may be greater. Some older persons may prefer to live in groups for mutual security, among other reasons. This can also be of benefit if they are away for extended periods of time.

1. Provide exterior lighting as an added measure of safety and security.

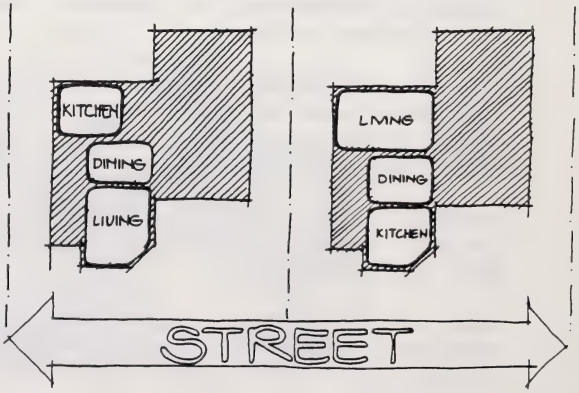
2. Provide secure locks on windows and doors. An alarm system is desired by many older people for added security.

3. Consider installation of a community alarm system which does not require wiring but simply plugs into a regular outlet. A pocket-sized remote control unit may be provided so that a person is free to move around the house.

Change, Adaptability, Flexibility

1. Interiors and exteriors must be designed to allow for the possible increasing disability of the resident, and/or a change in owner.

2. Flexibility is very important. Designs should allow individual needs and preferences to be incorporated. Repetitive design also reduces pride and individuality. Builders and designers should be ready with various options for owners.



Maintenance

Many older people give up their homes because they can no longer maintain their property. The reason in many cases may be a lack of suitable and low maintenance features. One of the prime objectives of this booklet is to show how the labour and material costs of maintenance can be reduced to a minimum, enabling longer independence for people. Further, a cluster of homes may be appealing for the possibility of cooperative maintenance.

1. The home should be easy to clean and require a minimum of housekeeping and yardwork.
2. Home products should have proven reliability and require minimum attention.

Home Care Help

An independent way of living for the aged can be made easier, and in many cases extended, by intensifying and increasing home help and various auxiliary services.

DESIGN RECOMMENDATIONS ON SITING & UNIT EXTERIORS

Choosing a Property Location

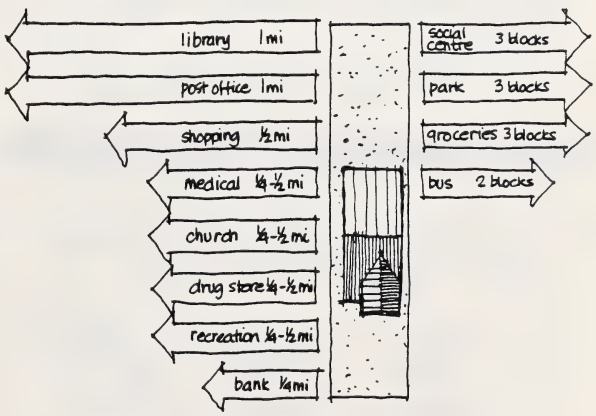
1. Property should be integrated within an established, age stratified community. The neighbourhood's future should also be considered for its continued suitability over time.

2. Try to select a quiet, but at the same time moderately active and therefore interesting, location which is preferred. Streetscapes of this type are ideal but noisy schools or playing fields are not desirable.

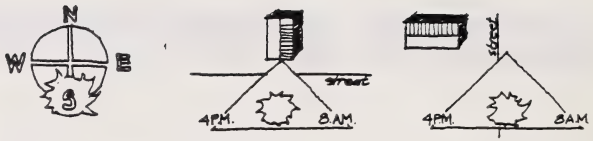
3. The diagram shows the preferred distances to local services and amenities for senior people. Immediate access to a bus is very important.

4. Property should be chosen in a safe area where seniors feel most secure. Threatening areas will cramp anybody's lifestyle but especially a senior's by keeping them housebound, especially in the evening.

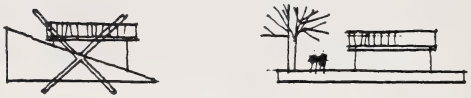
5. Many of the elderly have their roots and prefer to live in older established inner city neighbourhoods. People over 50 in Alberta cities usually live in semi-suburban areas. Generally, older persons do not desire isolated open country locations.



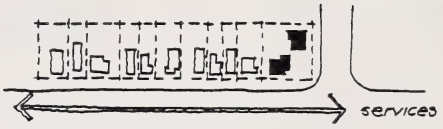
6. The front living room should be oriented South, or East as a second choice, to benefit from the winter sun angles in Canada. In summer the high sun will still shine in the back yard over low roofs.



7. Land should be flat, not sloped or stepped.



8. When selecting a site, remember that corner lots are difficult to plan for privacy in the rear yards. Orientation of one or more homes to the side street may create a feeling of alienation, unless surrounding characteristics alleviate this. Water and sewer service may cost more if they do not already exist in the side street. As well, an extra setback may be required from both streets.



9. Where the property has been previously used, attention should be given to derelict buildings that need removing, existing trees, vegetation, and fencing which can be saved, etc. These and other factors will affect the cost of new development.

10. The following factors should be considered: cost of land, zoning/-re-zoning, availability of sewer, water and power services, and improvements; if required, easements, liens, land use restrictions, soil composition, drainage, flooding, taxes, and adjacent land use.

11. Small lots which can provide for outdoor activities, yet require less work to maintain, should be considered.

Lot Design Principles

1. For homes in cluster arrangements, there should be street orientation and access directly from each home.

2. For security, every part of one's property should be visible from within the home. Neighbours should also have visibility onto one another's property to 'look out' for each other. Exterior lighting is needed for this purpose at night.

3. Where two or more homes are together and some part of the property is shared, there should also be some private outdoor space in front and rear yards for each home. If property is separate title, yards can be totally private if desired by home-owners. Rear yards should be shielded from street view.

4. The design should provide for a hierarchy of public to private spaces.

5. The yard should be simple in layout, easy to move around in, easy to maintain, and should provide space for various active and passive outdoor interests.

Home Appearance and Style

1. Optimally there should be no more than one party wall per home for attached houses. This allows for windows on a minimum of three sides and avoids the 'sandwich' feeling of row housing.

2. The appearance of a home should be compatible with homes in its area.

3. In planning more than one home together, care must be taken to balance the relationship of all homes together, and yet maintain the individuality of each home.

4. Some retired people spend more time at home. Therefore the feelings at home should be pleasant. This is attained in part by the use of a variety of colours, finishes, spaces and atmospheres.

5. 75 - 95 sq. m (800-1000 sq. ft.) is considered an ideal size of home by many older people.

6. Aluminum, vinyl, stucco and any other easy to maintain exterior cladding material is required.

7. The living areas (eating, kitchen, sitting) of the home should not be designed as either small individual rooms, or as one large open space; an in between situation would suit most people.

8. One storey homes with ground level entrances are preferred.

9. Older people adapt to new styles as well as anyone else.

Exterior Walkways

1. Walkways around the house should be hard surfaced nonslip and as level as possible. (Minor changes in level, gently sloped at a gradient no greater than 1:20, are relatively easy to negotiate.)

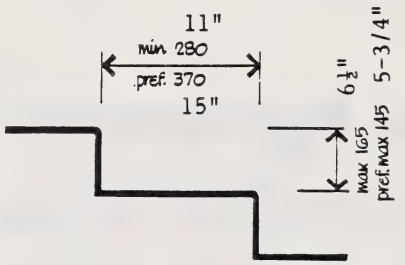
2. Eliminate single steps to all outside walks. If a single step cannot be avoided, mark it with some feature that can be seen well ahead, such as a marked change of surface, handrail, and/or a light.

3. The total vertical rise of any flight of external steps should not exceed 1,200 mm (4').

4. An unexpected ramp is more dangerous than a single stair because it is more difficult to see. The risk should be reduced by using handrails and a rough surface finish.

5. Use silica sand in deck paint on wood, indoor/outdoor carpeting, or a rough surfaced concrete.

6. Vegetation and fences should be placed so that drifting snow does not accumulate on walks and at entrances.



Landscaping

1. Consider raised planters for vegetables or flowers to make gardening easier for elderly persons.

2. All landscaping should be fully developed and mature, since older people are unwilling or unable to wait for a yard to develop. Low maintenance landscaping features reduce the annual work required, as do smaller lots.

3. Real and symbolic "barriers" should be positioned in order to designate private property boundaries. This involves the strategic placement of landscaping elements such as bushes, fences, entrance posts, and possibly gates. High fences (for privacy) are not recommended since they limit security surveillance by neighbours.

4. Plants which produce seed pods, berries, and other types of debris, should be avoided as they could make walkways slippery.

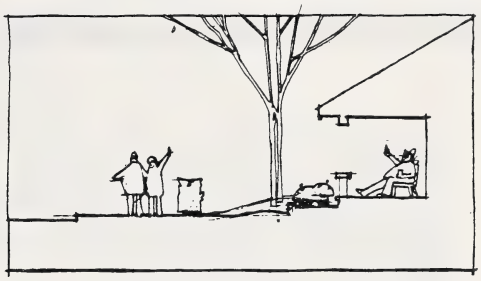
Outdoor Sitting Areas

1. A sitting area should be provided in the front for relaxation and viewing street activities.

2. A private sitting area should be provided in the back yard.

3. All outdoor sitting areas should have protection from unwanted wind and excessive sun.

4. Lawn furniture should have adequate back support and wide armrests for comfort. Low seats are difficult to get up from as one ages.



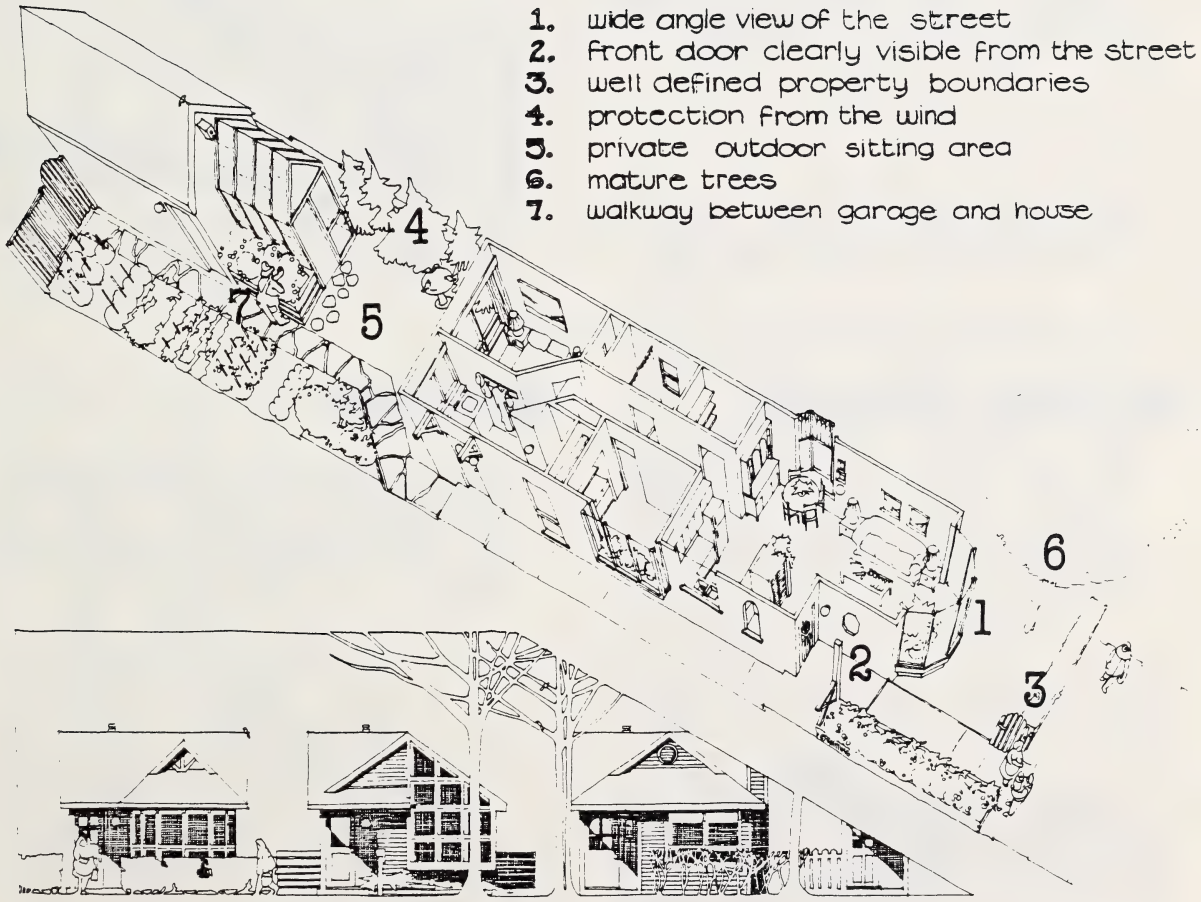


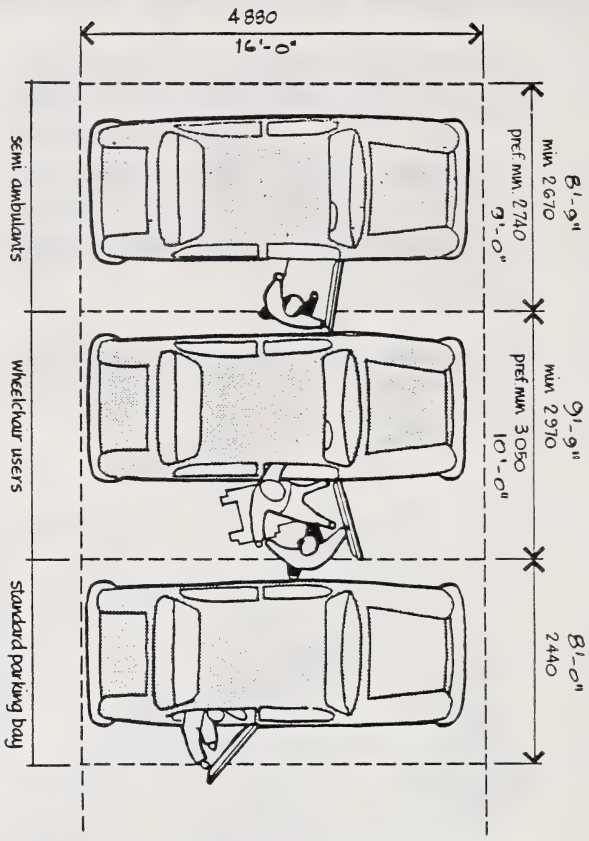
Figure 1: SITE PLANNING

Car Parking and Maintenance Area

1. This area should have a short direct access to the house, by means of a walkway, for carrying groceries, etc. In the absence of a car, this area could be put to other uses temporarily, but should be available for future parking.

2. Garages or parking pads should preferably be designed to have a 1.2 m (4') clear space on both sides of the parked car, and other sufficient space to move easily to the walkway.

3. Consider attached garages with automatic door openers; if affordable, and if sufficient property width allows.



Outdoor Storage

Provision should be made for the storage of patio furniture and garden equipment in an outside storage shed or garage.

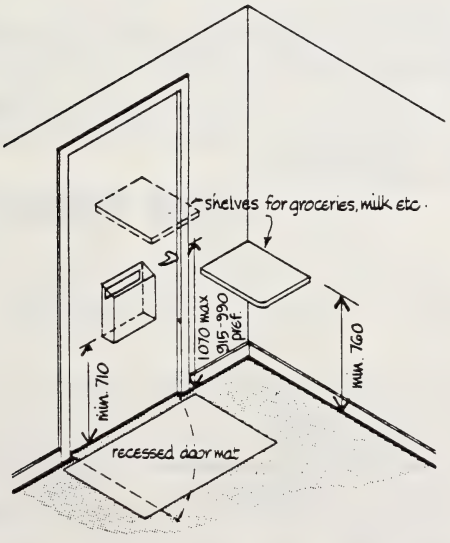
Garbage

The garbage disposal point must be conveniently accessible from the dwelling and be under cover. It must also be capable of being lit at night.

DESIGN RECOMMENDATIONS ON UNIT INTERIORS

Entries

1. For security, the front entry area should be visible from the street and clearly lit at night.



2. Exterior entry areas should be visible from inside before opening the door to visitors.

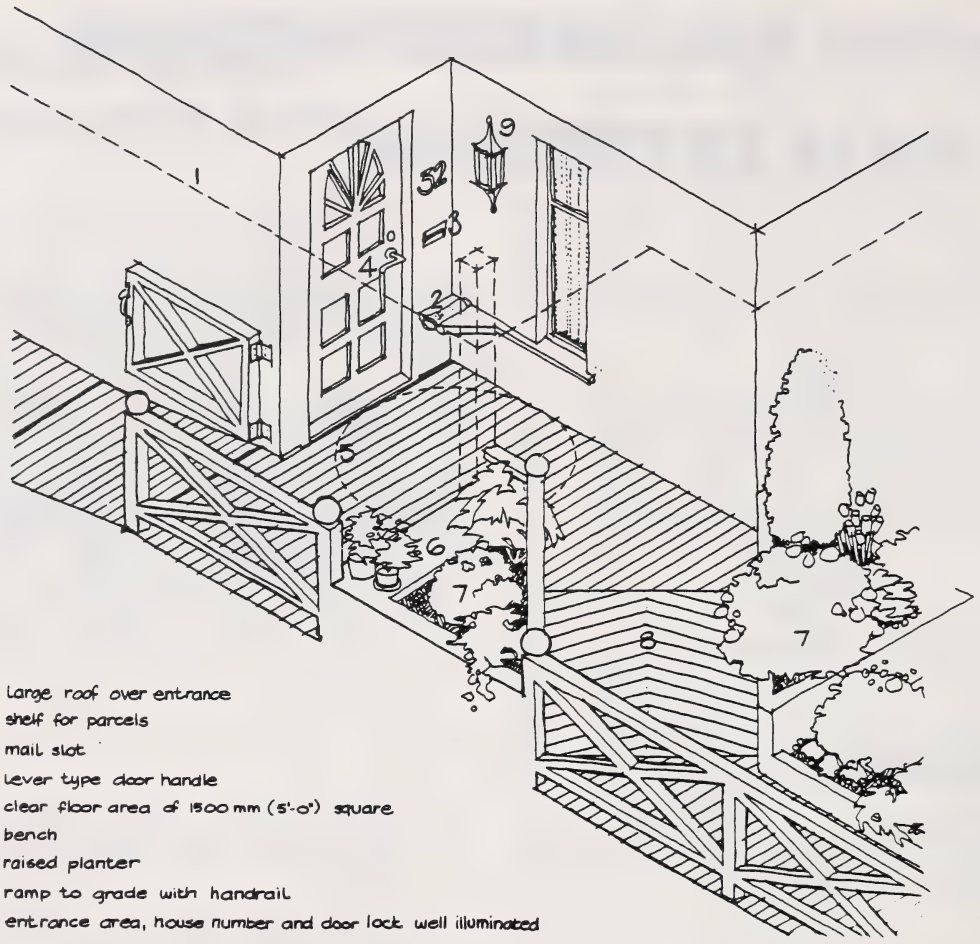
3. Entry areas should be protected from the weather and should be at least 1.5 m x 1.5 m (5' x 5').

4. Wherever possible, provide a grade level entrance to facilitate easy access.

5. A rain threshold should be the only step from inside to outside. The step should be easily distinguishable by contrasting colour or material.

6. Thresholds should be kept to a minimum; where necessary, they should be less than 15 mm (5/8") and bevelled to improve access.

7. Storm doors are not recommended since they create tactical opening problems for elderly people. Weatherstripping doors is a suitable alternative.



1. Large roof over entrance
2. shelf for parcels
3. mail slot
4. lever type door handle
5. clear floor area of 1500 mm (5'-0") square
6. bench
7. raised planter
8. ramp to grade with handrail
9. entrance area, house number and door lock well illuminated

8. Avoid spring-type locks which oblige the user to hold the key in position while turning the door handle. Use door and locks which can be opened using only one hand.

9. Provide a shelf for parcels both inside and outside of the front door.

10. Employ a receiving basket or bag for collecting mail from a door slot.

11. There should be ample space provided for opening and closing doors, including doorswings.

Living area

1. This space is used intensively by the aged. It should be as appealing and as interesting as possible - in terms of size, shape, outlook, color, etc.

2. Effort should be made to increase the apparent spaciousness of rooms by using long vistas and reasonably open planning.

3. Older people may own large and cumbersome furniture requiring sufficient space and unbroken expanses of walls and corners, allowing for a variety of possible furniture arrangements.

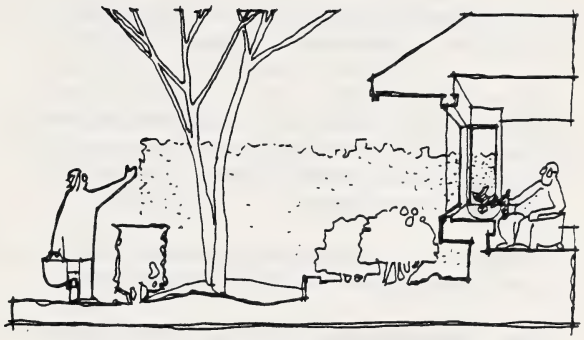
4. Low cushiony chairs are often avoided by older people since it is difficult to get in and out of such chairs, despite the degree of comfort provided while seated. Arm rests are desirable in all seating and should extend at least as far forward as the seat itself.

5. There should be ample wall area for hanging heavy and/or large pictures. A method of hanging is required other than direct fastening (a re-introduction of picture moulding may be in order here).

6. A living room 7.4 - 8.4 sq. m (80 - 90 sq. ft.) for singles and 13 sq. m (140 sq. ft.) for two people, are bare minimum space requirements.

7. The living area should be orientated to capture some winter sun, thus creating a bright room.

8. A moderately active and interesting window view of street activities is desirable. Windows should give a wide angle view of outside "action" when sitting inside.



9. Windows should be moderate in size for winter cold, but with a sill level low enough to enable a seated person to see out. For a sense of privacy, a minimum 600 mm - 800mm (2' - 2'8") sill height is recommended. Extra wide window sills to accommodate plants are desirable.

10. The living area should be shielded from the front entry.

11. Try to avoid views of the kitchen from the living room.

Dining area

1. A nearly square plan rather than a rectangular plan provides more flexibility in furniture layouts.

2. The dining room is best located adjacent to the living room or adjoining a hallway in order that it can be expanded if necessary.

3. The dining area table may double as a desk, sewing table, card table, etc.

4. A window view from the table should be possible.

Kitchen

1. A compactly planned and efficiently equipped kitchen is recommended.

2. Place the kitchen in a central location in the home. It should be accessible from the main entrance and directly accessible from the living and/or dining area.

3. Provide a convenient freezer storage area within or close to the kitchen.

4. Ensure continuous work surface between the fridge, the sink, and the cooking area to permit heavy items to be moved along the counter thereby decreasing the risk of spills and burns. Kitchen layout should be provided in adjacent sequence fridge, counter, sink, counter, range, counter.

5. An "L" shaped kitchen is preferred to a "U" shaped one because it requires less turning and maneuvering, even though "U" shapes are slightly preferred for appearance reasons. Galley kitchens are not recommended, a one wall kitchen could work.

6. A pantry in or near the kitchen offers a very accessible storage option, supplementing the conventional upper and lower cabinets.

7. Avoid lighting which causes a person to work in his/her own shadow.

8. Provide good lighting, in conjunction with light coloured finishes which will reflect light and contribute to overall lighting.

9. Provide a window in the kitchen.

Shelves and Cupboards

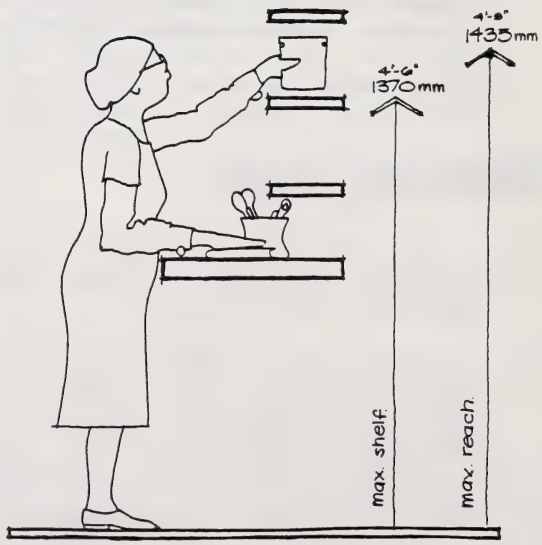
10. The mounting height of shelves should be determined by taking account of the upward and downward reach, the eye level of seniors, and whether or not a work-top or sink projects to form an obstruction in front of the cupboard.

11. The range of standing eye heights is between 1335 mm (53") and 1575 mm (62"). An additional cupboard shelf should be provided, where possible, at the lower end of this range, so that a shorter person can see into the cupboard.

12. Provide no shelves lower than 600 mm (24") under a work surface; for even at that height, most people will have to bend.

13. Provide plenty of built-in storage, for if it is inadequate, it is likely that large pieces of furniture will be brought in and overcrowd the limited space.

14. The maximum forward reach, without bending, is limited by the abdomen. With a work-top height of 850 mm (33"), forward reach without bending is limited to 370 mm (15"). As some bending from the waist can be assumed, allow 480 mm (19") as a sensible front to back maximum counter width for regular use, though space could be left up to a maximum width of 600 mm (24") for equipment.



15. Standing work-top height is related to elbow height and it should not exceed 850 mm (33 1/2") though the rim of the sink may be higher, up to a maximum of 940 mm (37"), as the working level is within the depth of the bowl. A sink-top of not more than 480 mm (19") front to back should be provided to ensure easy reach forward to the taps.

1. Lighting over sink/work area
2. Lighting & exhaust over range · with no cupboards above
3. pull-out storage over refrigerator
4. pull-out cutting board for additional work surface
5. pull-out under-counter storage
6. range controls on front
7. single lever-type control for water faucet
8. lowered over-counter cupboards
9. 'greenhouse' window with shelves for plants
10. small 'breakfast' table & extra sit-down work surface

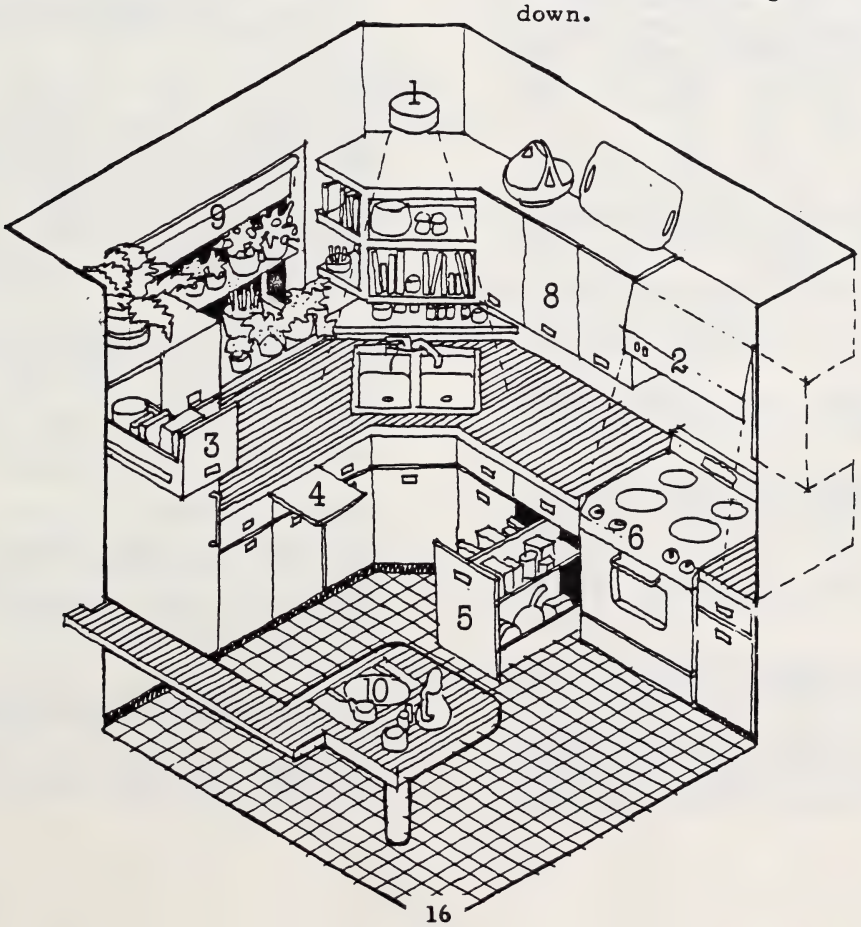
16. Shelves should not be lower than 300 mm (12") or higher than 1520 mm (60"). Adjustable shelving can be set to the owner's preference.

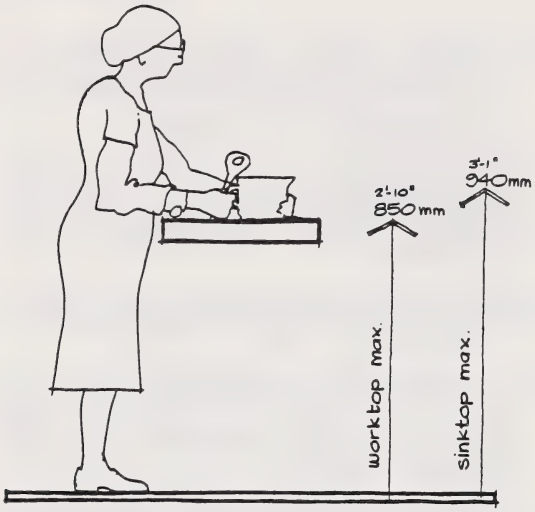
17. Accidents can be caused by reaching over the stove to reach the cupboards above. Consider eliminating this form of storage.

18. Provide adequate storage at a normal reach for all items in daily use.

19. All reaches over 1600 mm (63") and under 600 mm (27") should be eliminated to avoid dizziness, falls and stiff muscles.

20. Provide some low kitchen counter work surfaces with knee space under to permit meal preparation, and in some cases dishwashing, while sitting down.





21. Sitting work-top height should be as near elbow height as the construction allows, with thigh clearance below. A work-top height of 700 mm (27 1/2") corresponds to sitting elbow height and allows sufficient height for work-top thickness and clearance above thighs.

22. Provide pull-out boards which are a welcome addition to any kitchen, as they increase the available working space. They offer an accessible work area for a wheelchair user, because the boards are at a lower height than the counter and provide knee-space.

23. Large handles on cupboards and drawers are strongly recommended.

24. Consider sliding doors on kithen cupboards as they are often more convenient and space saving than hinged doors. They are also safer as they eliminate the possibility of head injuries.

25. Sliding doors are preferred to hinged doors on all storage cabinets.

26. Swinging doors on kitchen cabinets should be as narrow as possible to avoid projecting beyond the counter top.

Kitchen Storage

27. To increase storage, consider shelves on the inside of closet doors. To improve access to storage under counters, install hanging racks, deep drawers, pull-out shelving, lazy susans, and corner inserts.

Fixtures

28. For safety reasons, electric ranges and ovens should be used rather than gas. Controls on ranges should be on the front or side to avoid burns, and elements should exhibit a positive glow when lighted or have warning lights.

29. Consider a counter-top range with side controls and an eye-level oven. Use smooth surface cook tops thereby making it easier to slide heavy pots and pans safely. Eye-level ovens need convenient adjacent surface for transferring hot dishes.

30. Use continuous self-cleaning ovens.

31. Double sinks are necessary to provide for hand laundering.

32. The faucet handle should be large and easily worked by non-dexterous users.

33. Consider lever faucets or single-arm controls which are easier to manipulate.

34. A dishwasher is a very desirable piece of equipment and is recommended if costs and space permit. This and other labour saving home features may keep an older person in their own home longer.

35. Heavy appliances should be on easy roll out glides or rollers to permit cleaning.

Bathroom

1. Bathing can be quite an ordeal for seniors and if baths are not designed with an understanding of their physical difficulties, they may seldom be used. Some aids must be provided to allow infirm seniors to bath easily.

2. The bathroom should be big enough to allow a person to dress and undress without difficulty. The bath may be set so that the rim is no higher than 380 mm (15") from the bathroom floor. This is as high as many seniors can manage to step. Most baths obtainable at present would have to be set with the trap below bathroom floor level and the flow of the bath approximately at general floor level although low-sided baths specially designed for seniors are now coming on to the market.

General

3. Even a bathroom which is a modest 2400 mm x 1800 mm (8' x 6') should be designed to accommodate the access requirements of those with mobility problems when the bathroom is appropriately laid out.

4. Consider making bathrooms larger than the minimum size since seniors need more room for maneuvering. Wheelchairs require almost double the space.

5. The entrance to the bathroom should provide a clear opening of at least 800 mm (32") and the door, when open, should not block access to the fixtures.

6. Use an outswing door which gives more accessibility and enables opening the door in case someone collapses against it from the inside.

7. Bathroom floors must have a non-slip finish. This applies to tub and shower bottoms as well.

8. Do not use windows as they are felt to be undesirable due to lack of privacy and drafts.

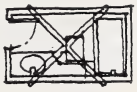
9. Any emergency call bell or buzzer should be within reach.

10. A linen space should be located in or close to the bathroom as well as a space for laundry.

11. Provide a short and direct path from the bed to the bathroom.

12. Medicine cabinets and soap dishes should be set flush with the wall.

13. The toilet, sink, and tub should not impede each other.



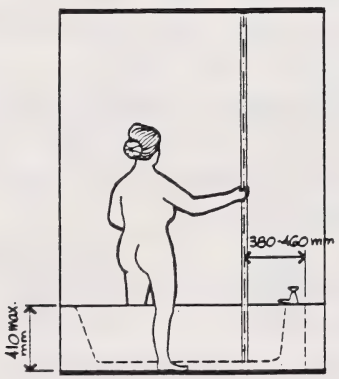
14. The top shelf of the medicine cabinet should not be higher than 1500 mm (5') above the floor.

15. The medicine cabinet should have sliding doors.

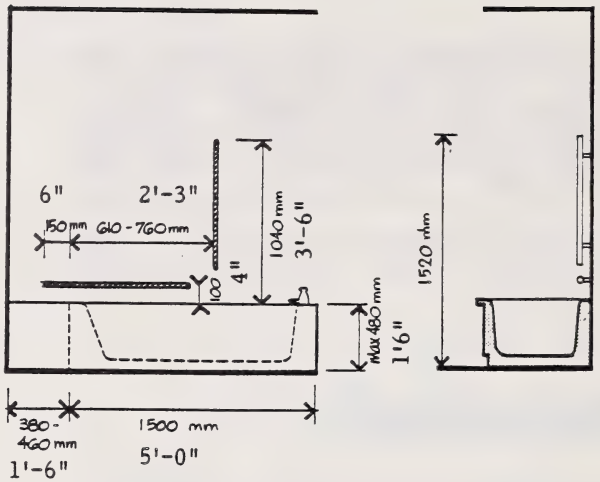
16. A supplementary radiant heat source, preferably located in the ceiling, is recommended. The equipment should be governed by a 20 minute time switch that is not connected to the bathroom light switch.

Bathtub

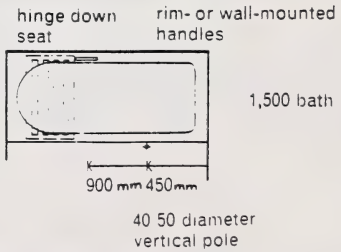
17. A person with a stiff leg will find it difficult to step into the bath and before doing so, will need to hold on to something firm, without bending. Consider installing a pole such as shown in the following illustration which runs from floor to ceiling on one side of the bath and has a diameter of approximately 40 mm (1 1/2") for easy gripping (preferably covered with a non-slip material such as P.V.C.). If the pole is placed near one end of the bath, so that it does not act as an obstruction, it will assist the user to get in while standing upright. It is important that the surface is as flat as possible; relatively flatbottomed baths which meet this need are available. A rubber mat on the bottom of the bath will reduce the risk of slipping on the enamel. The vertical pole also gives a secure handhold until the bather reaches the sitting position.



18. Consider the combination of a handrail on the access side and handle on the other as probably the most useful aid for helping the standing or reclining bather to move to the sitting position. The most suitable length of a bath is 1500 mm (5') as it discourages slipping down; many older people do not find it easy to regain the sitting position.



19. The height of the bath from floor to rim (380 mm (15")), is also a convenient height for a seat. Some people have great difficulty in getting out of a bath once they sit down in it. They could wash their feet and legs while sitting on a wooden seat across the bath. Such a seat should be secured so that it cannot slip and might, in some cases, be conveniently hinged to the wall. The hand shower, mentioned below, may also suit such people.

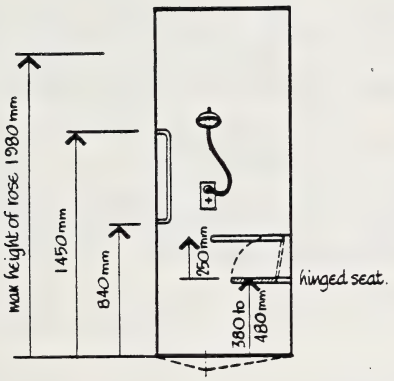


20. Provide two soap dishes in tubs with showers, one mounted high to prevent stooping while showering.

21. At least one handhold to assist an elderly person into or out of the bath must be provided. This will normally be a horizontal rail secured to the wall beside the bath. Consider the aid of grab bars even if not handicapped.

Shower

22. Showers should be considered as they are cleaner, more invigorating, safer, use less water than tubs, (especially with low volume spray heads) and are seen to be gaining in acceptance among the elderly. Fixed or fold down seats, handholds, and a well marked step are desirable.



23. Use adjustable shower fittings which permit the use of a hand spray in a carriage which slides up and down, attached to a flexible hose. A seat in the shower will enable the user to use the hand spray for washing while sitting down or to stand up with the shower set at a convenient height.

24. The hot water feed to the shower should be thermostatically controlled to give a maximum output temperature of 49°C (120°F) so that there is no risk of shock or accident from scalding water.

25. Shower heads must be adjustable for sitting and standing. Hand held shower heads are recommended in bathtubs.

26. Shower door locks should be operable from either side.

Basins (Wash basin)

27. The height of the rim of the wash basin should be related to elbow height (between 800 mm and 850 mm (31" and 33")) and the bottom of the basin should be within easy downward reach.

Taps

28. Hot and cold taps could be clearly distinguished by colour e.g. red and green. To avoid confusion, they must be "handed" consistently in any one dwelling.

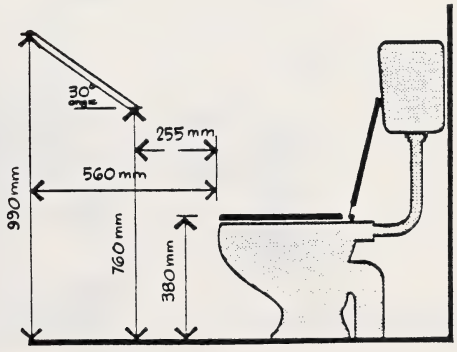
29. Lever handled taps or single arm controls should be conveniently placed to regulate water temperatures before shower or bath. Consider more accessible locations for taps in bathtub than conventional location.

30. Single-arm control faucets at tub and washbasin are recommended.

Toilet

31. Elderly people often need to visit the toilet during the night and it should be conveniently placed in relation to the bed space.

32. Toilets should be detailed so that very little effort is required to clean them. The junction of the pedestal with the floor finish, should be designed to keep to a minimum the difficulties of floor cleaning.



Grab Bars

33. Consider inclined rails mounted on the walls, preferably on each side of the toilet, as a useful aid. The most suitable seat height is about 380 mm (15").

34. Toilets should be adjacent to a wall for easy paper access and the grab bar attachment.

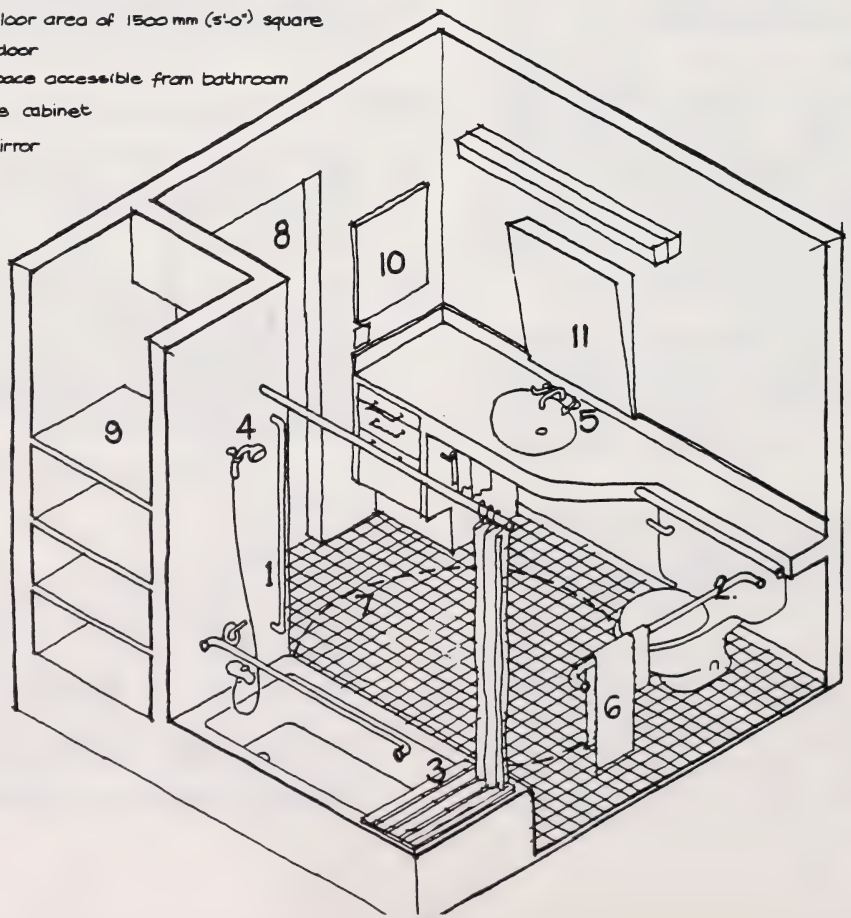
35. A toilet is handy beside the tub as a seat. The toilet seat should be durable enough for the older person who tends to sit down heavily.

36. A grab bar, if necessary, should be mounted on a wall alongside the toilet.

37. While we are not suggesting that grab bars be installed at the time of building in all cases, there is concern that as our population ages, more of us will require them for safety. For this reason, we suggest that walls around the tub and beside the toilet be reinforced with 15 mm (5/8") plywood, so that grab bars can be added later, if required without expensive alterations.

38. All towel racks or rods which may double as grab bars, must be sturdy and securly mounted.

1. bathtub grab bars
2. toilet grab bars
3. hinged seat across bathtub
4. adjustable shower unit
5. lever type handles
6. grab bars used as towel rod
7. clear floor area of 1500 mm (5'-0") square
8. sliding door
9. Linen space accessible from bathroom
10. medicine cabinet
11. tilting mirror



Bedroom(s)

1. Provide for a possible bedridden situation, with as pleasant a space as possible, including good light, views, and ventilation. Where this situation is already known to exist, a front streetscape view is desirable with a provision for opening up the bedroom into a more open plan.

2. Size the bedroom to accommodate a night table, storage chest, chair, closet, and either a queen size bed or two singles plus a 900 mm (3') space.

3. A variety of positions for the bed should be possible providing a minimum 460 mm (18") access to both sides. Wheelchairs require 1500 mm (5') on one accessible side.

4. The bedhead should be clear of window and door drafts.

5. Locate the window so it is possible to look outside when in bed. Locate the bed away from the window and parallel to it in order to minimize the glare.

6. Set the maximum sill height for a person lying in bed to see out at 600 mm (2'). However, a loss of privacy and sense of insecurity may occur at this height.

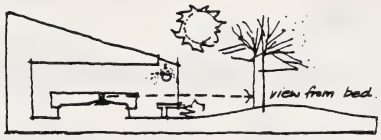
7. High wide windows give an even light, a wide view, a sense of privacy, and a secure feeling. For other than bedridden persons, an outside view while in bed is not important. However, a high wide window should allow for change if a person became bedridden.

8. Provide three-way switched lights with switches by the door and bed.

9. Consider a bell or buzzer by the bed to summon assistance.

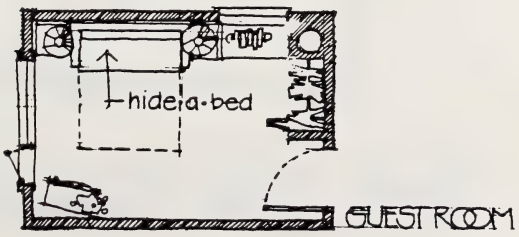
10. Design for a short, relatively direct path from the bed to the bathroom.

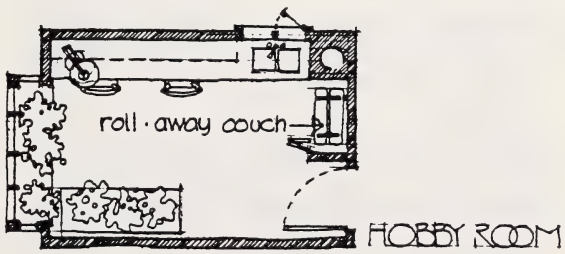
11. A clothes closet should be not less than 550 mm (22") from front to back, to allow clothes to hang at right angles to the floor on a rail mounted at 1500 mm (5') from the floor which is within easy upward reach, but high enough for clothes to hang clear of the floor.



Spare Room

This space should be designed flexibly so that it can be used as a second bedroom, den, hobby room, etc.



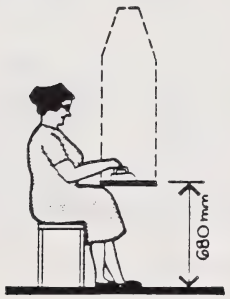


Laundry Area

1. Laundry facilities should be located on the main floor close to a backyard clothes hanging area. The rear door would therefore be close by.

2. Provide storage for dirty linen.

3. Top loading washers and dryers are easier to access than front loaders, but also consider smaller apartment-sized washers and dryers which are shallower and may prove easier to use.



4. Provide a laundry wash sink if possible.

5. Provide for indoor drip-drying.

6. Include convenient shelving for soap storage, etc. and an accessible clothes folding surface (could be fold down).

7. An area for ironing should be provided near to the folding surface, possibly at sitting height.

8. Vent the dryer to the outside and provide a fan for good ventilation of the area. Provide a proper means for supply (and heating as appropriate) of air extracted by the dryer and area extracting fan.

9. A pet eating and/or litter space could be located in this area.

Stairs

1. Stairs should be avoided wherever possible.

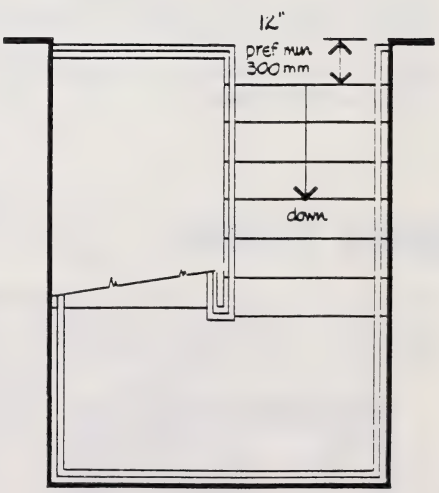
2. Where necessary, stairs should be made as psychologically and physiologically safe as possible.

3. Avoid long ramps which present more of a strain than do stairs.

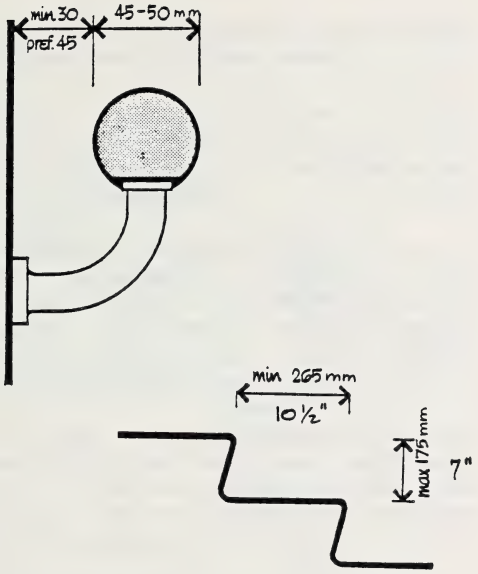
4. Basement stairways should be located near the home's rear entry.

5. External stairs are nearly always unsuitable and should be avoided. They can be dangerous in wet or frosty weather; therefore, they may discourage an older person from going out.

6. Avoid long, unbroken runs. Stairs should be split run with a landing about half the way down.



7. Landings on stairs are required to provide safe places to stop in case of sudden dizziness and fatigue.



8. Use of winding stairs or open treads is not recommended.

9. The nosing of the top riser of an access staircase should not be closer than 300 mm (12") to the wall return, for safety reasons.

10. Provide uniform rise to run ratio throughout house.

11. Optimum domestic stairway dimensions depend more on tread depth than stair rise, and stairs should allow at least 85% of the shod foot to be placed on the stair. The maximum rise should be 175 mm (7") with 150 mm (6") where possible. Rise x run, in inches, should equal 70-75.

12. Choose contrasting colours for treads and risers to aid those with failing eyesight. Contrasting nosings may serve the same purpose. The top and bottom nosing should be white.

13. Handrails are needed on both sides of the stairs. If there are windows on the staircase, the handrail should run past them.

14. Additional support, and confidence, is obtained where both handrails can be gripped at the same time; consequently try to ensure they are not more than 900 mm (35") apart.

15. Optimum height of the handrail above the stairs should be 840 mm (33").

16. The handrail should have a circular cross section of 45 - 50 mm (1 3/4" - 2") diameter.

17. Balustrades to landings and stairs should be structurally secure; they should also instill confidence by appearing to be so.

18. It is important to be able to see ahead, especially when one is going down the stairs. If staircase is lit from the top, anyone going down will be in his own light. Therefore, light should shine towards the stair riser.

19. Install two-way switches at the top and the bottom of stairs.

20. Light fittings and windows on staircases should be within normal reach to reduce the dangers when cleaning windows or changing light bulbs.

Storage

1. Ease and accessibility to storage must be considered, especially for older persons; particularly to minimize reaching, bending, and lifting.

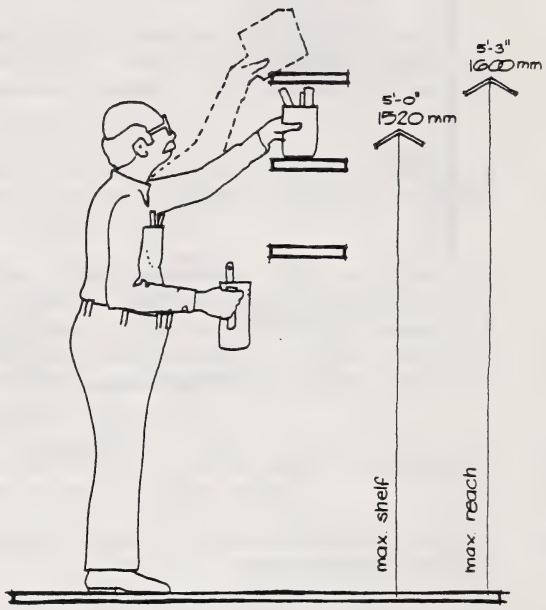
2. Old-fashioned clothes closets featuring small doors with most of the space for storage recessed behind the wall are virtually unusable. Open up this

space and add additional shelving or baskets, and lower clothing rods to substantially improve accessibility and usefullness. For hanging clothes, the bar should be lower than usual at a maximum 1500 mm (5').

3. Miscellaneous, infrequently used or seasonal articles should have a heated, dry storage area. This may be in the basement if one exists, or in a main floor space. A garage may also include a space for storage, especially if heated and attached to the house.

4. Design closets to maximize storage and minimize bending.

5. Wherever possible, some miscellaneous storage space should be provided on the main floor. It should have a minimum of 10 cu.m and preferably 14 cu.m of space (100-150 cu.ft.). Provide an electrical outlet for a freezer in this space if another location is not provided.



Heating and Ventilation

1. As they become less active, older people feel the cold more and need warmer conditions for comfort. They need warmth through the whole dwelling, not only in the living room. Ensure that good heating is provided in the bedroom and bathroom; two areas that are especially important to people whose movements have become slower with age.

2. Provide good heating to ease many of the physical ailments of older people, particularly rheumatism and arthritis.

3. Heating systems should be designed to maintain temperature at 21°C (70°F).

4. Reduce variations in temperature to + or - 3°C (+ or - 5°F)

5. Consider heating levels of up to 27°C (80°F) which may be required by some aged. Higher heat levels will reduce humidity, so this should be compensated for.

6. The heating system should respond quickly and provide a uniform distribution of heat.

7. The heating system can contribute to a feeling of stuffiness when the air temperature at head height is too high and when the rate of air movement is inadequate. High humidity or steam from cooking may contribute to a feeling of stuffiness. A controllable ventilator or where possible a mechanical fan should be provided in the kitchen.

8. Provide exhaust fans to the laundry, kitchen, and bathroom area.

9. Seniors are acutely aware of drafts and, as the air temperature rises, their skin tends to become more sensitive to them.

10. Rooms and other spaces should be naturally ventilated. Particular care should be given to the type of opening window. Top opening windows with a minimum setting notch or other adjustment are usually less drafty.

11. Many aged will not open windows for fear of drafts, heat loss, and security. The mechanical system must provide minimum ventilation requirements throughout the year.

12. Design the heating system to take low ventilation rates into account.

13. In forced warm air heating systems, use effective filters to reduce atmospheric dust to a minimum.

14. Provide an additional heat source at locations where a person may be sedentary for extended periods of sitting.

15 Consider providing a switched heat lamp in bathroom.

16. Use double glazed windows as the minimum standard, they save heat and are warmer when one sits close to them.

17. Install adequately insulated floors and the proper choice of flooring materials which are preferable to radiant floor heating.

18. Install upgraded insulation as home buyers have demonstrated their preference to this despite the extra cost.

Plumbing

1. Hot and cold taps should be clearly distinguished by colours (red & green) to avoid confusion.

2. (See Kitchen and Bathroom for further recommendations.)

Sound Control

1. Older people find noise disturbing, particularly low frequency pounding and thumping sounds; therefore, as far as it is practical, dwelling units should be sound insulated from noise within and outside of the home.

2. The desire for privacy increases with age; distant and impersonal sounds are not as serious a problem as are immediate and recognizable noises; consequently, consider soundproofing in adjoining walls as this is very important to semi-detached home buyers.

Electrical

1. Light switches should be normally arranged to align horizontally with door handles. (Usual standard 1010 mm (40")).

2. Consider butterfly switches which are easier to operate.

3. Illuminated light switches in halls, bedrooms, and bathroom are recommended.

4. Provide 3-way switches and master controls in the entry, in the garage and in the master bedroom.

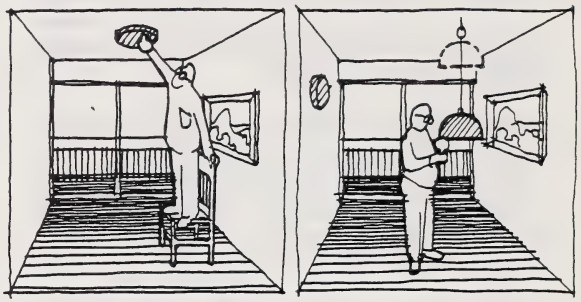
5. Mount electrical outlets a minimum 530 mm (21") above floor level. Convenience outlets 600 to 900 mm (2' - 3') from the floor are recommended.

6. Multiple-switched convenience outlets are recommended.

7. An adequate number of outlets should be provided to discourage the use of trailing cords which people are liable to trip over.

8. Electrical outlets should be positioned where they are not likely to be obscured by furniture.

9. Provide pull-down (adjustable height) light fixtures that are easy to manipulate when changing bulbs.



10. Locate the electrical fuse panel in an accessible location on main floor.

11. Meters should be placed in well-lit positions within or below the range of eye heights, between 900 to 1500 mm (3' to 5') from the floor, where they can be reached without difficulty.

Lighting & Illumination

1. Lighting affects the safety of seniors and must therefore be designed with care, imagination, and understanding. Decline of visual ability in later life requires higher levels of illumination.

2. Provide high levels of illumination. Older people do not see as well as the young, even in good light, and are slower in adapting their sight from one level of brightness to another. They may also suffer from some blurring of vision which can be troublesome even at short range.

3. Vision is most helped by a strong light on whatever work is being done, with relatively less light on the surroundings. However, if an attempt is made to improve the visibility of the tasks by raising the illumination on them, the illumination on the surrounding walls, etc., should also be raised to avoid what would appear to failing sight as dark pools of shadow devoid of visible detail. In practice, the brightness of the immediate surroundings of the work, for example walls or floors, should not be less than one third of that of the work itself.

4. Optimum levels of illumination: *
   - kitchen, handicraft, etc. **lux. 200
   - sitting room, utility, bed-sitting 150
   - dining room, bedroom 100
   - coat closet, entrance, stairs, corridors (req'd at floor level) 100
   - garage 80
   - storage areas (at floor level) 50

5. For most seniors it is important to cut out the glare of the sky. This can be done in several ways, two of which are by using blinds that can be lowered part way down the window, or by installing fixed, external, high-level louvres. The brightness of the sky, seen from inside the room, is most intense at the top of any window opening. A reduction in the head height of the window limits the angle of vision to the less bright part of the sky. Lighting from the side will help to reduce the contrast between the bright window head and the dark space above it and to minimize glare. Tinted window glass will also reduce unwanted glare.

6. The designer should eliminate glare from bright lamps and fittings at night, as well as from the sky by day, and should avoid too many contrasts in colour or brightness in the field of view. Unnecessary contrasts can distract attention from particular visual tasks, but contrasts in tone or colour can be usefully employed to pick out things in the room that need to be seen easily, such as door handles, light switches, bell pushes etc.

7. Most of the requirements given below are for single-purpose rooms. In multi-purpose rooms, the points at which the separate visual tasks are performed should be equally well lit.

Kitchen

An exterior view from a kitchen is very desirable and may be provided by a window in the kitchen or by a view across a dining/eating nook area. A kitchen window should be located so that it is not necessary to reach across the sink to either open or clean it.

Living and Bedsitting Rooms

Normal window requirements will result in a good general level of illumination and visual comfort. For general activities requiring higher levels of illumination, the senior may have to move closer to the window. In a living room for older persons there is a strong case for providing natural lighting from two sides. Apart from minimizing glare, the quality of lighting in the room is improved, and people who spend a great deal of time looking out of the windows are given a wider view. If this is impossible, a bay window can be a worthwhile second best solution. It will bring more of the floor area into sunlight and also give more reflected light from the ceiling as well as a pleasant sitting space with a good all-round view.

* The provincial building code has established minimum window and lighting requirements which must be considered when designing a house.

** The 'lux' is a measure of illumination which may be achieved by providing incandescent lighting at the rate of .1 (1/10) Watt per square meter of floor space.

Bedroom

A senior who is confined to bed will almost certainly enjoy looking out of the window. This is easier and more comfortable if the window is arranged in relation to the bed area so that the view is to one side rather than over the end of the bed. The glare from a window straight in front may cause some discomfort. A bed light controllable from the bed is reassuring during the night and, for a person who has to get up frequently, easy to use.

Circulation Areas (halls and foyers)

These areas do not generally require daylighting, relying instead on electrical illumination. If windows are used and there are fittings or furniture in the space, the daylight should be provided so that there is no noticeable difference in light between the living room and the circulation space.

Steps

The difficulty of seeing steps is a frequent cause of accidents among seniors. Occasional single steps and raised door thresholds should be avoided in new buildings. Where they exist, some contrast should be provided between the tread and rise, or between the step and the surrounding floor finish. The level of illumination above steps should be increased.

Artificial Light

8. Fluorescent lighting has been installed in some accommodation for seniors, but the problem of screening the flicker and brightness of the tube has not been satisfactorily solved. Unless there are overriding reasons for fluorescent lighting, use tungsten filament (incandescent) fixtures.

9. Ceiling fixtures which are only accessible by chairs or ladders are to be avoided. Fixtures should be easy to remove when changing light bulbs.

10. Outdoor areas likely to be used at night should be provided with adequate light.

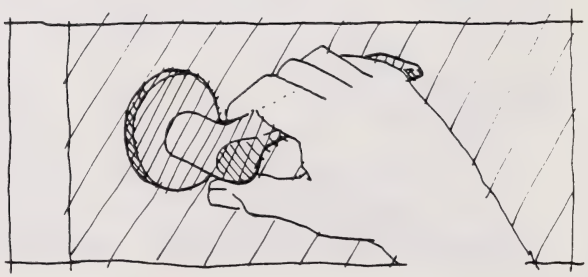
11. Provide light coloured trim around windows to reduce high contrast, as good overall lighting is aided by the use of light paint colours and finishes.

12. Lighting should be arranged and switched so that movement paths can be lit ahead and turned off behind.

13. Night lighting is required in all bedrooms, out of direct vision of person in bed (a wall panel light may be suitable). A 'night light' switch should be mounted near the bed.

Doors

1. Seniors tend to shuffle and drag their feet, and thresholds and upstands at doors frequently cause them to trip. Where weatherstripping or thresholds cannot be avoided, they should be made as noticeable as possible by contrast and good illumination.



2. Many seniors suffer with arthritic fingers and have difficulty in gripping. Employ well-designed lever handles which are easier to manipulate than a door knob. A mounting height of 1000 mm (39") will be comfortable for most people. Octagonal and hexagonal rather than round knobs are the next choice.

3. A simple container mounted behind or to one side of the door allows the occupant to collect the mail without the effort of bending to pick it up off the floor. This should be located at 1000 mm (39") above the floor.

4. If a storm door is used, it should require a force of only 36N (8 lbs.) to open and should close gently. (Equalizers and adjustable low pressure door closures are available.) Standard door closures can be dangerous to slow moving persons.

5. Doorways should provide a clear opening of at least 760 mm (30"), the door itself should be at least 810 mm (32") wide. Consider replacing butt hinges with swing-clear hinges thereby increasing the effective size of the opening by the thickness of the door.

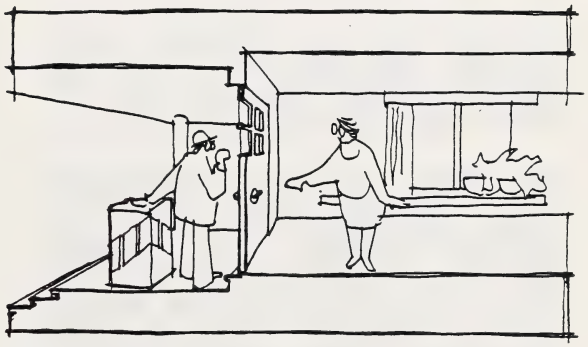
6. Use 915 mm (36") door openings for wheelchairs and for people on crutches.

7. Consider sliding doors replacing swinging doors where maneuvering around door is a problem. Also consider bi-fold and 'accordion' doors. Sliding closet doors are most desirable.

8. Consider outward opening or sliding doors as a useful precaution. They can be opened without obstruction if an old person has fallen inside the room.

9. Use sliding doors on cupboards and in kitchens. They are safer, more convenient, and space-saving than hinged doors.

10. Peepholes 1500 mm (5') high, or vision panels provide some measure of physical and psychological security. An intercom system allowing verbal contact with unknown visitors could be incorporated if money permits.



11. Consider alternatives to standard key hardware which will make key handling simpler. A suitable alternative is the push button electronic lock.

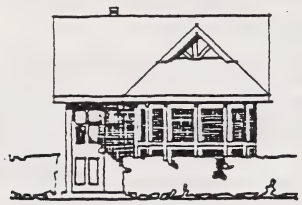
12. Use good door locks to give an added feeling of security.

13. Spring type locking devices are to be avoided as they require two hands to open. Provide a locking device which permits unlocking and opening of door with one hand.

14. Locks on the doors to the bathroom should be of a type that can be opened from the outside.

Windows

1. Since seniors spend a great deal of time sitting at the window watching the world go by, they generally prefer windows which give an outlook of activity and life as well as a pleasant sunny environment.



2. The size of windows should be decided on the basis of orientation, daylighting and heat loss, and they should also be influenced by the limited reach of many persons.

3. As strength and grip diminish with age, seniors need windows that can be opened with very little effort. The side-hung casement, with a fastener that is both comfortable to grip and easy to turn, is one of the simplest to use and should be considered. Some older people prefer windows that slide open. Locks should be easy to operate.

4. Avoid glazing windows to the floor as older people dislike being on view to the outside world and lowered windows heighten the feeling of exposure. However, where immediate surroundings are particularly interesting or sheltered, as a garden may be, glazing to the floor could add to the interest and natural lighting of the room.

5. 840 mm (33") is recommended as the maximum sill height for a seated person to view out. Sill heights lower than 760 mm (30") above the floor may cause feelings of insecurity.

6. Consider skylights at key locations to aid in providing daylight to interior halls, rooms, and spaces.

7. Avoid locating horizontal window mullions at either sitting or standing eye level.

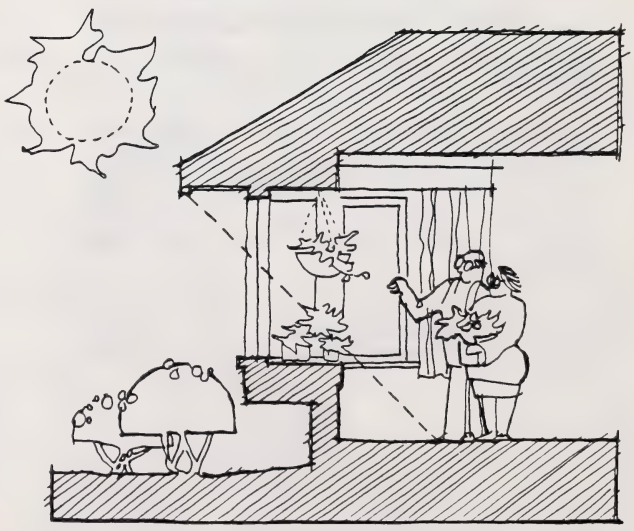
8. Windows should perform well for ventilation, light, and view.

9. Ample light and sunshine is required. Ideally, all homes should have a generally southern orientation. This is particularly important during the winter.

10. Consider large strip windows as they are desirable for views and uniform light distribution.

11. South windows should have a shading device to reduce glare. Venetian blinds, expecially vertical ones, are preferable to roller shades since they can variably control light and views are not completely shut off. Draw drapes are less expensive and insulate against the cold better than other treatments.

12. Fresh air ventilation requirements are better served in northern climates by mechanical means. Due to cold drafts, seniors may refuse to open their windows in winter.



13. Provide double glazed, casement, sash windows with a bottom vent panel and a large operating mechanism. Both sides of the window should be cleanable from the inside and have insect screens.

14. Weatherstrip and seal windows to reduce drafts and save heat. Despite these precautions, large windows will still feel cold.

15. Many seniors have great affection for indoor plants, and like to use the window sill for their display. Provide an impervious sill so they can do this without any fear of damage to the finishes.

16. Ground floor windows should always be lockable to prevent access.

17. Locate opening mechanisms from 750 mm (2'6") to 1500 mm (5'0") above the floor.

Floors

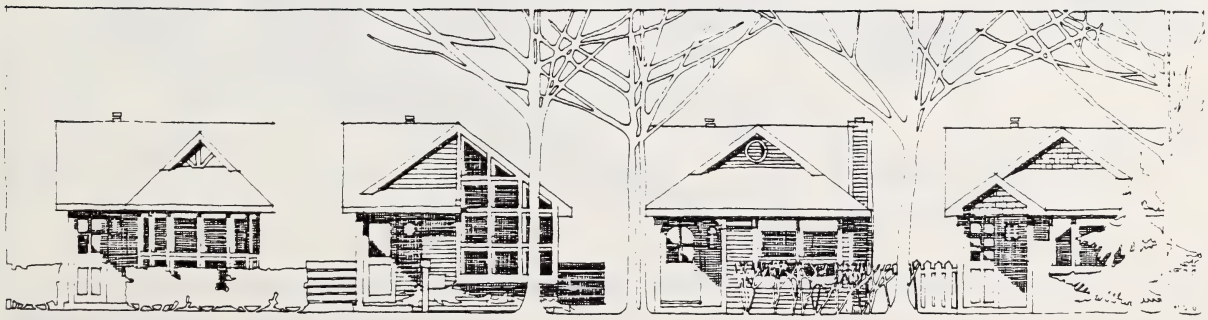
1. Floor finishes for seniors should be quiet (particularly in corridors and halls), resilient, non-slippery, and easy to maintain.

2. Homeowners should be discouraged from polishing their floors to a high sheen, as this can make even a non-slip surface dangerously slippery. A number of proprietary seals are available which add to the life of the material and make polishing unnecessary.

3. In the bathroom, it is most important that the floor immediately adjoining the bath should not become slippery or be cold to stand on when wet.

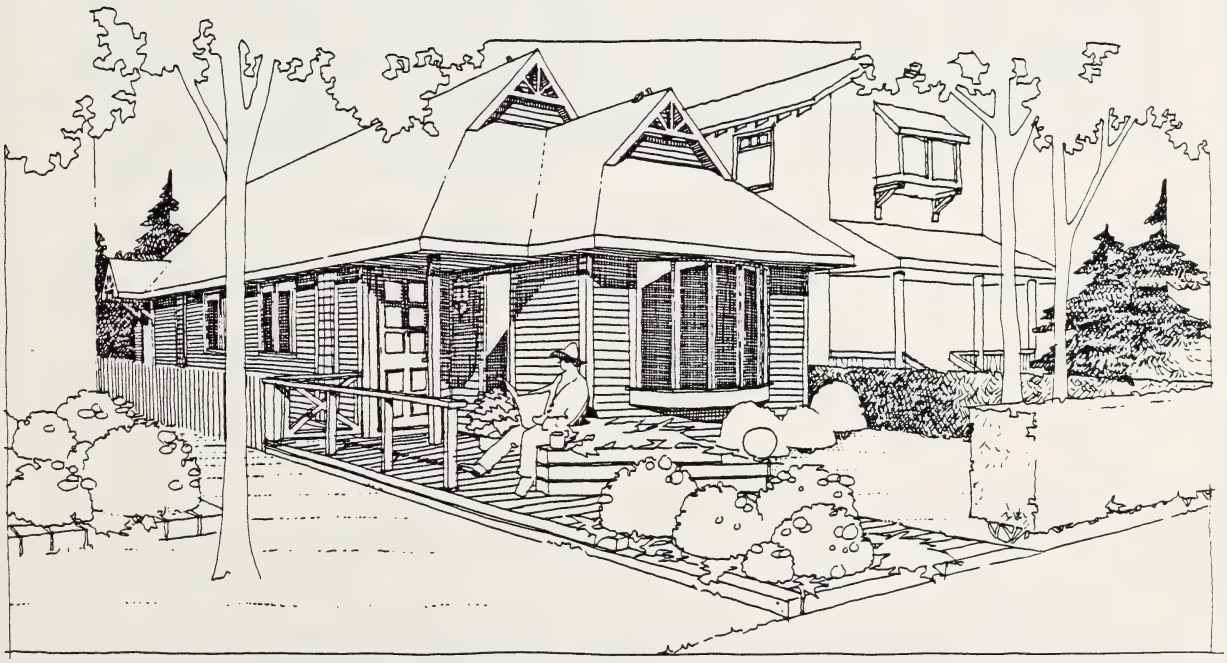
4. Smoothness and levelness of floors is as important as slipperiness. Level changes between rooms and flooring types should be avoided. Exterior door thresholds should be the only exception because of weather protection measures.

5. Consider tightly woven carpet for its resistance to dirt, durability, and limited tendancy to trip-up users.



elevations
detached housing

HOUSE PLANS, ELEVATIONS & SITE DEVELOPMENTS



view from the street

Profile of Older Homeowners

As noted elsewhere in this booklet, the prototypical designs will not be entirely suitable for all older people, due to natural differences in tastes and needs. However, the homes, illustrated on the following pages, were designed with an average Alberta couple in mind, according to the housing preferences and statistics found in recent surveys.

The prototypical plans have been developed to suit the typical older couple who might be thinking of moving into a more responsively designed retirement home. The following description is a composite of that couple and representative of Alberta's senior home buyers. The couple presently lives in the city in a home they purchased about 40 years ago. Their children were raised in this two storey home of 120 sq.m (1300 sq.ft.). Due to age, the home is now in need of extensive renovation. Together with high maintenance costs, high labour to keep up the house and yard, and the stairs becoming more difficult to climb as they approach 65 years of age, the couple has chosen to move into a more suitable home. They had at one time considered renting and/or moving to a warmer climate, but these options were discarded in favour of remaining in their familiar neighbourhood with the security of owning their own home.

Financially, this older couple is able to maintain themselves in retirement. They have recently sold their home for $85,000 and will soon be moving into rental accommodation while their new home is being built. They had wondered about selling their home in the present recessive time, but after carefully considering all the financial implications, they realized that in fact they would merely be trading the equity in their old, fully-owned, family home, for the new, smaller home in the same area. The cost of the new home will be $79,000, comprising the land at $34,000, building costs of $39,250, and new city services costing $5,500. They will therefore have $6,000 remaining. In addition, the lower costs of future maintenance will save them money from their retirement pensions and savings. They are now looking forward to their retirement in a home they know will serve them well and enable them to remain independent for the better part of their remaining years.

Summary of Senior's Housing Preferences and Statistics

.1 61% of older people over the age of 65 prefer to live in single detached homes.

.2 58% could afford to purchase a home costing $70 - 80,000.

.3 73% are married.

.4 90% desire a minimum of two bedrooms.

.5 68% are currently living in owned, single detached housing (85% built prior to 1961, 46% built prior to 1946).

.6 50% live in urban areas.

.7 The majority prefer to remain independent of institutionalized care for as long as possible.

.8 85% of the elderly in small towns live in their own home.

.9 70% of total home accidents happen to the elderly. Safety in the design of a home is a top priority for them.

.10 Most elderly homeowners live in 90-120 sq.m (1000-1300 sq.ft.) homes now but would prefer a smaller home in the future. One quarter of seniors move betweeen the ages of 65 - 70.

.11 The vast majority of older people live in private households (93% of elderly men and 95% of elderly women over 65 - 71% of elderly men and 59% of elderly women over 85).

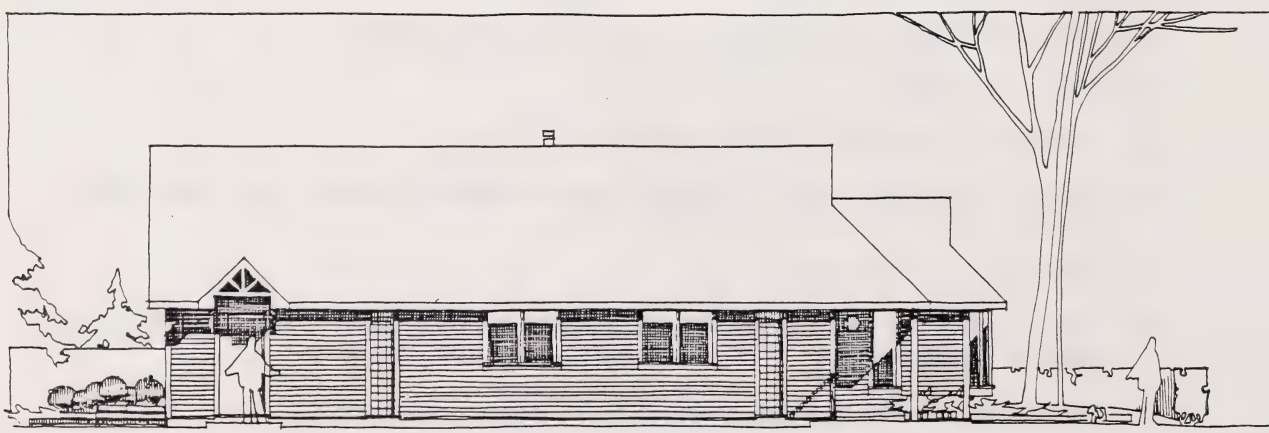
.12 The major housing category for the elderly is the single house (accommodates 60% of the elderly).

.13 19% of seniors live in private sector rental units, 12% in public sector units, and 1% miscellaneous.

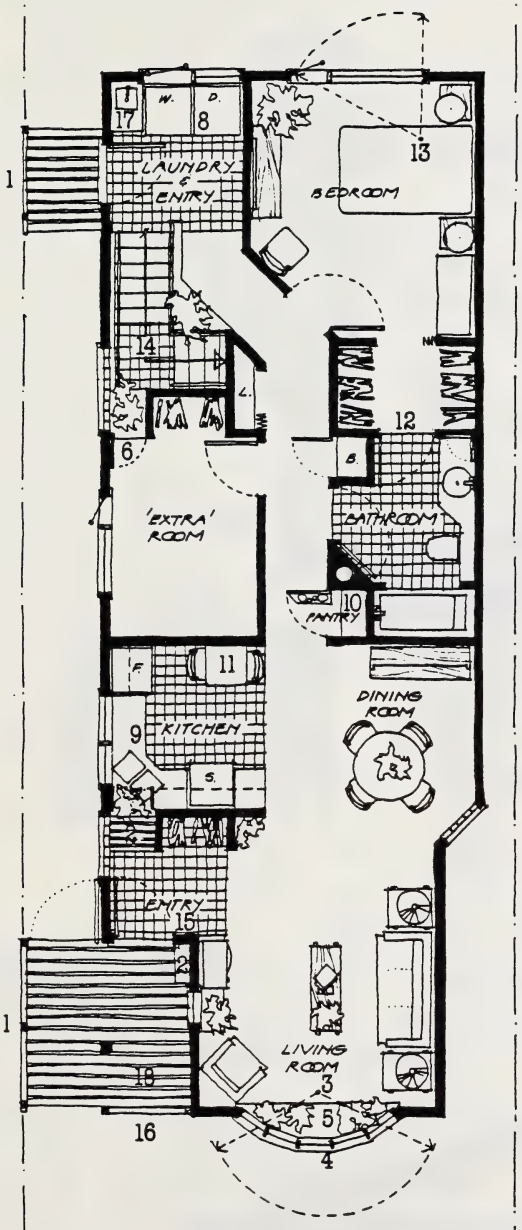
Figure 2:

Single-Detached House

street elevation



side elevation
detached house



1 covered entrance 'porch' at grade
2 shelf-bench at entrance for parcels & dressing
3 'wide-angle' view of street & neighbourhood
4 low window sill to enable a seated person to see out
5 wide sills to accomodate plants etc.
6 room designed to suit multiple use
7 daylight over stairs
8 laundry on main floor convenient to back yard
9 continuous work surface in kitchen
10 pantry supplements kitchen storage
11 'breakfast table' & sit-down work area
12 bathroom accessible from bedroom
13 view from bed
14 landing on basement stairs with handrails both sides
15 letter container in wall at door
16 entry clearly visible from street
17 sink & dirty linen storage
18 sitting-out area on front 'porch'

Figure 3:

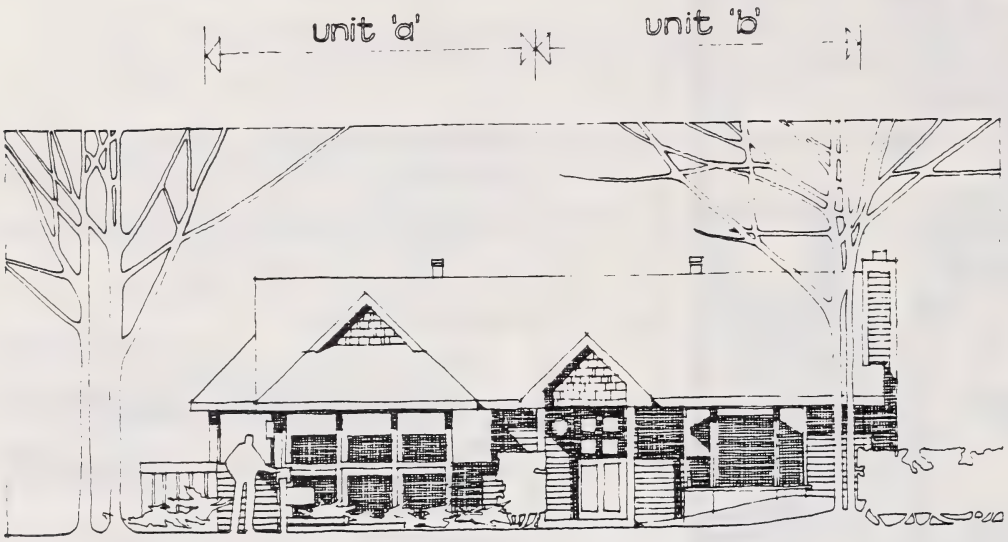
plan · detached house

0' 5' 10'

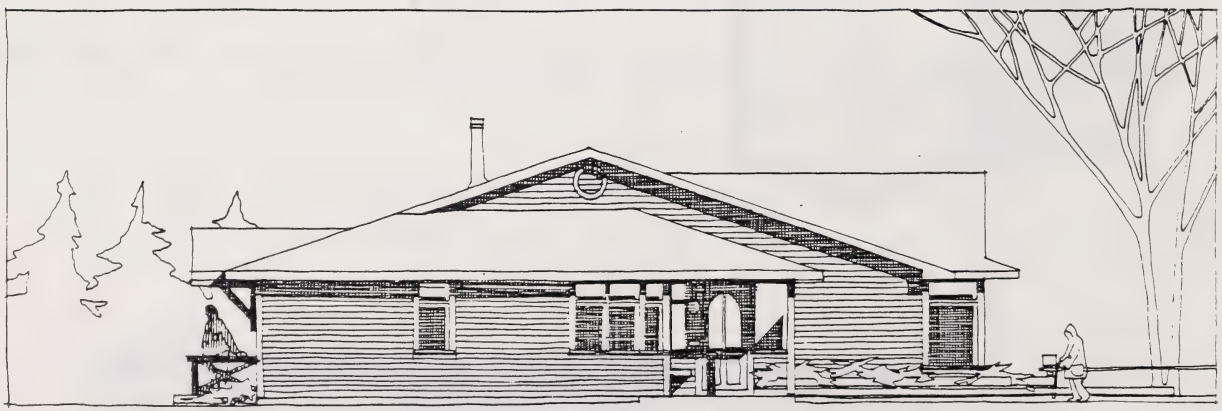
gross floor area = 929 S.F.
86.3 m²

Figure 4:

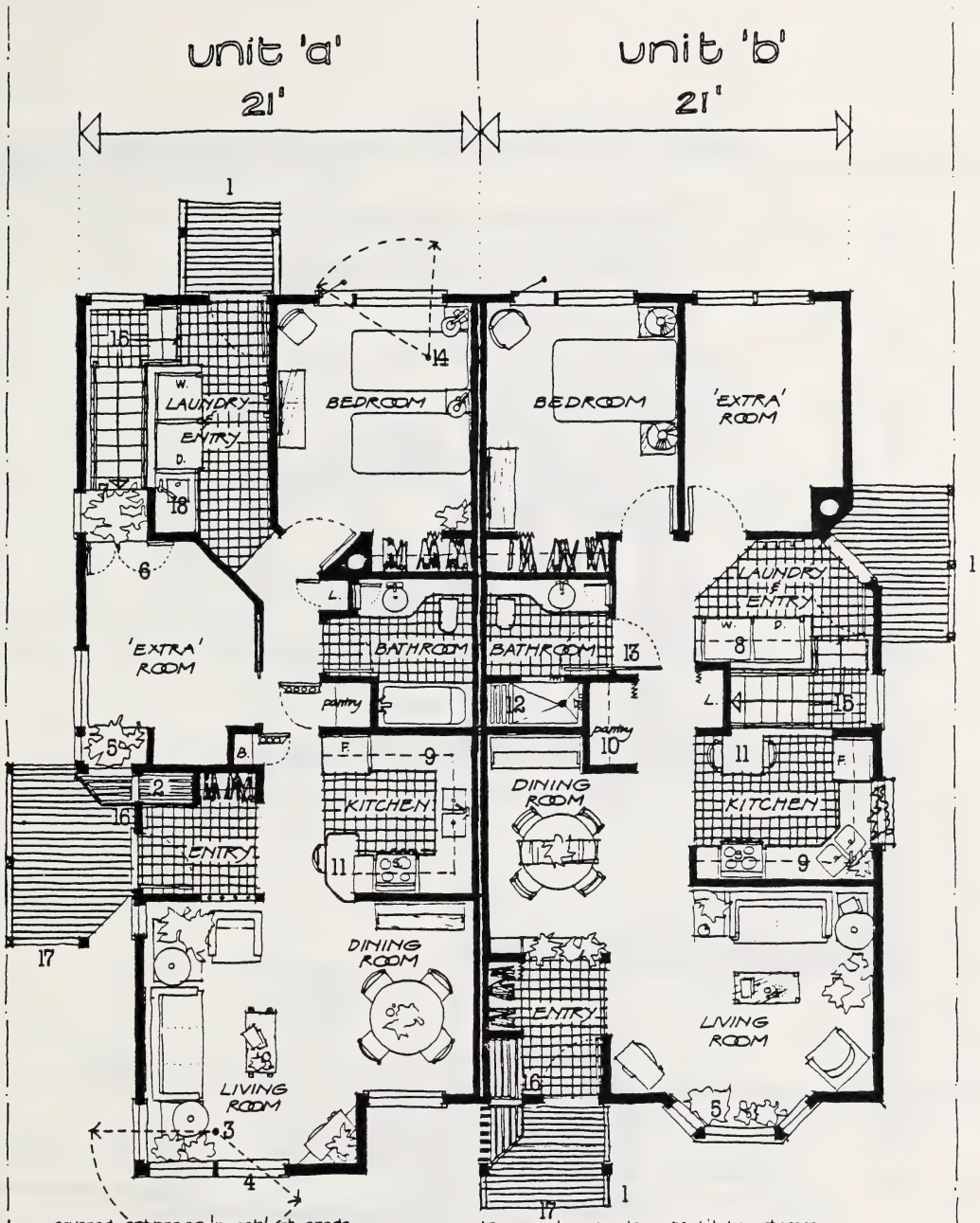
Semi-Detached Houses



elevation
semi-detached housing



elevation
semi-detached housing



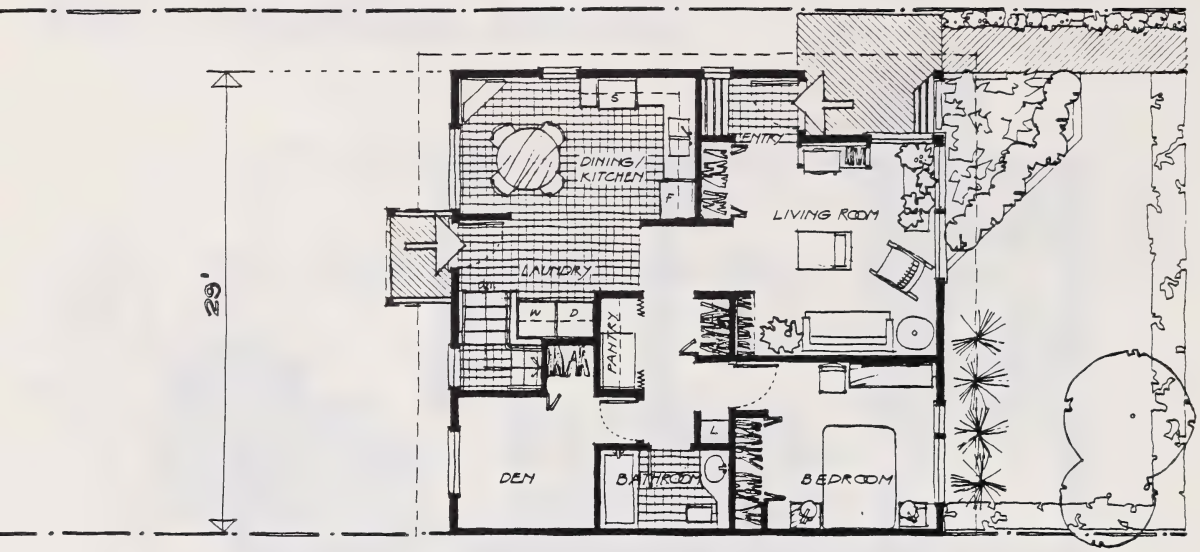
1. covered entrance 'porch' at grade
2. shelf-bench at entry for parcels & dressing
3. 'wide-angle' view of street & neighbourhood
4. low window sill to enable seated person to see out
5. wide sills to accomodate plants etc.
6. room designed to suit multiple use
7. daylight over stairs
8. laundry on main floor convenient to back-yard
9. continuous work surface in kitchen
10. pantry supplements kitchen storage
11. 'breakfast' table & sit-down work area
12. shower with bench & adjustable shower
13. out-swinging door in emergency
14. view from bed
15. landing on basement stairs with handrails both sides
16. letter container in wall at door
17. entries clearly visible from street
18. sink & dirty linen storage

plan • semi-detached houses

0' 5' 10'

gross floor area unit 'a' = 890 s.f. 82.7 m² unit 'b' = 843 s.f. 78.3 m²

Figure 5:



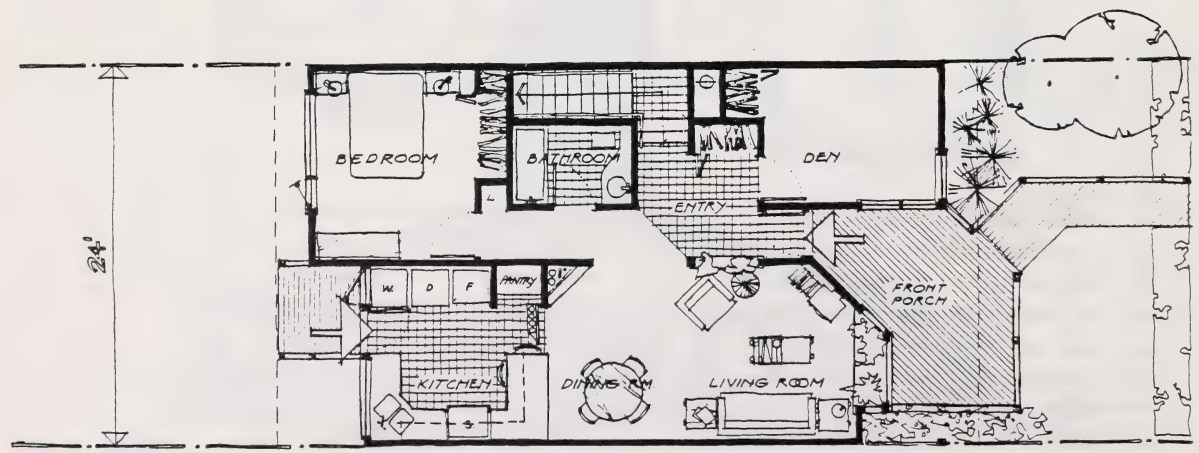
plan · semi-detached house
unit 'c'

0' 5' 10'

gross floor area = 79.1 m² (851 s.f.)

Figure 6:

Attached House



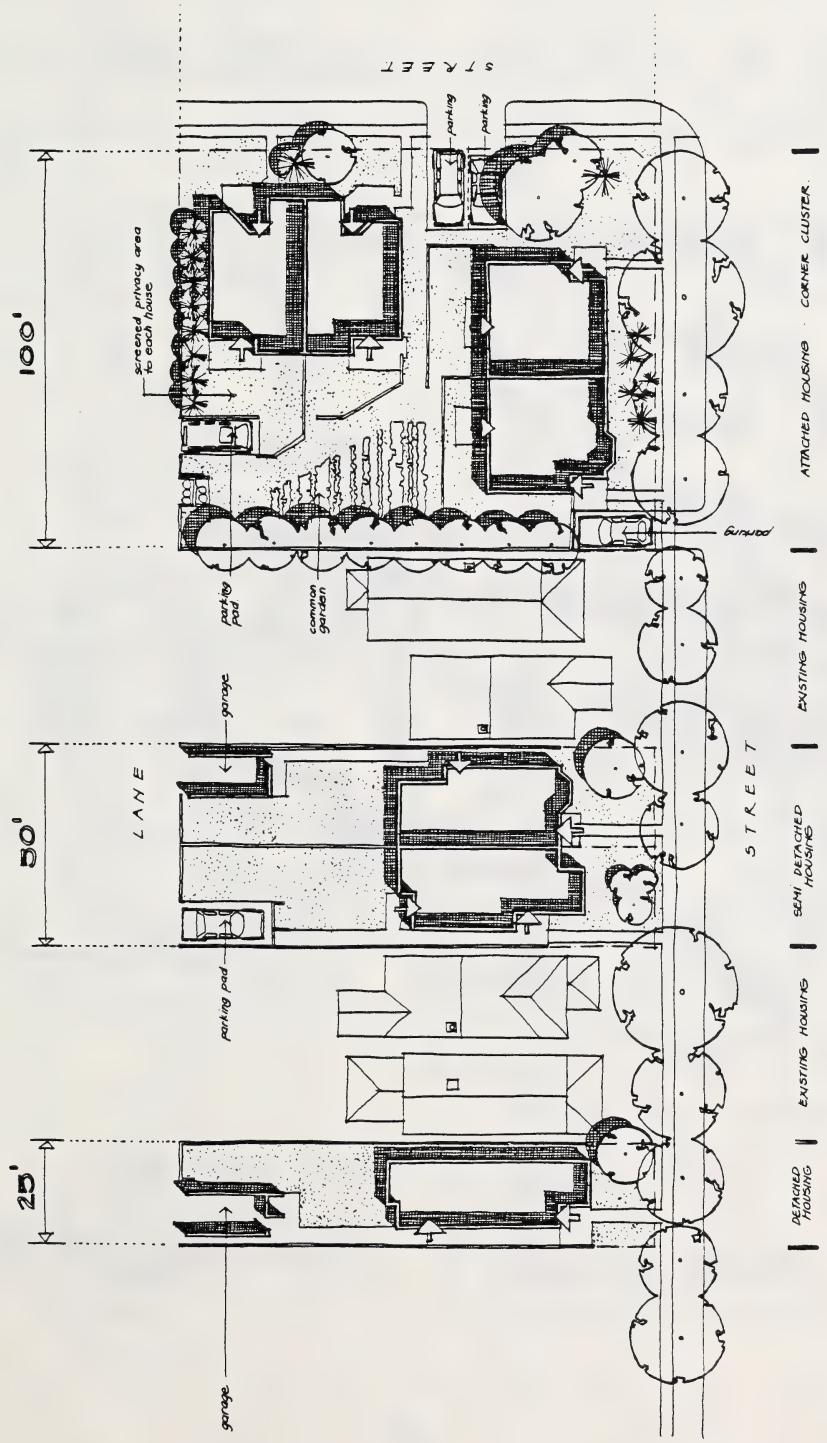
plan · attached house

0' 5' 10'

gross floor area = 77.6 m² (835 s.f.)

Figure 7:

Site Development Possibilities



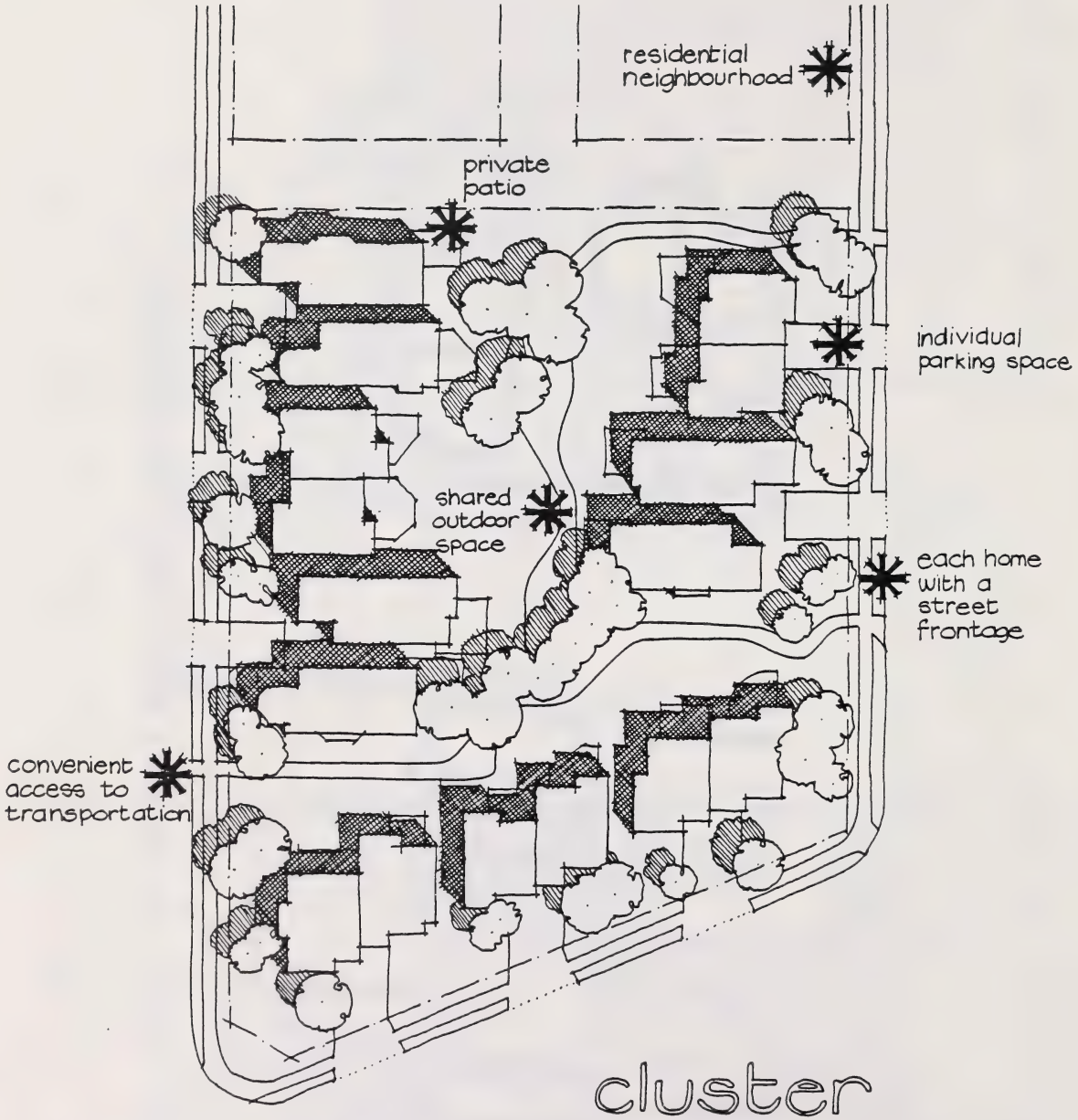

residential neighbourhood
private patio
individual parking space
shared outdoor space
each home with a street frontage
convenient access to transportation
site plan · cluster development

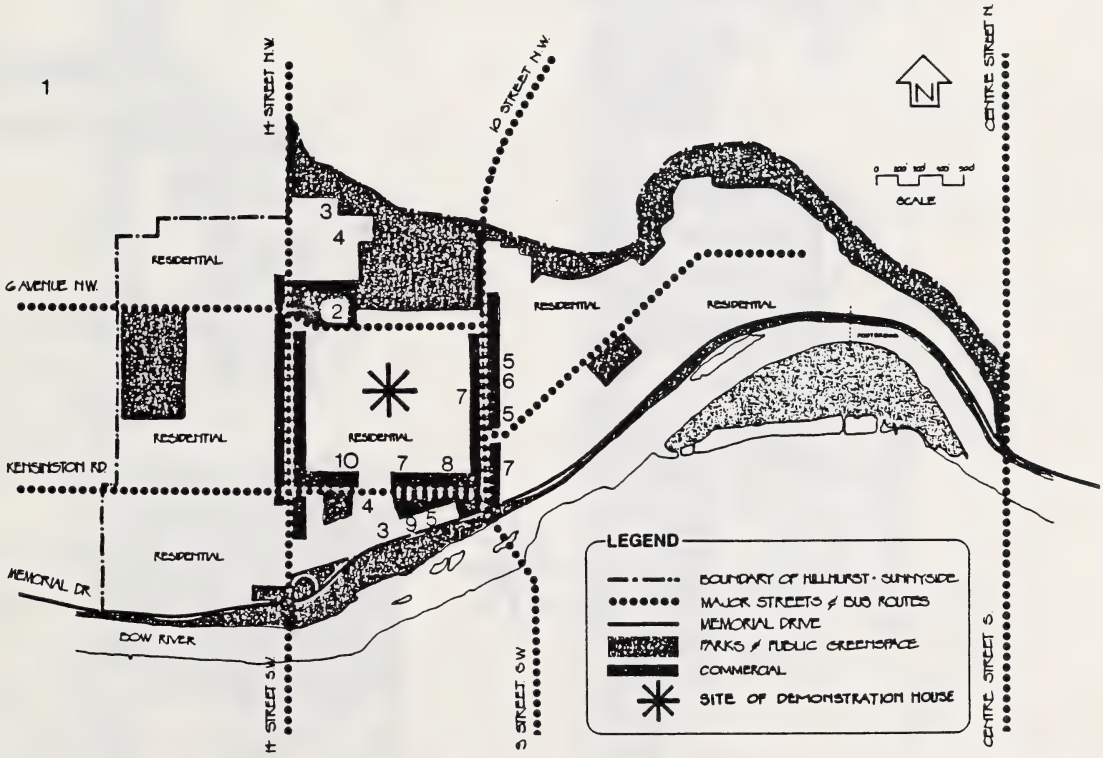
Figure 8:

Urban Site Example

The site described in the following pages incorporates most of the criteria used by the elderly in evaluating a new home and can therefore be regarded as prototypical.

The hypothetical site is located in the Hillhurst Sunnyside area of Calgary bordering the downtown with easy access to shopping, services, parks and health care facilities. It is also located in a neighbourhood with a high proportion of elderly people and many community supported programs and facilities for the elderly. The east-west orientation of the lot would maximize site development possibilities.

While there are higher land costs associated with property in this area, the proposed prototypical house is located in an attractive community with a large elderly population and easy access to services.



THE SITE AND THE COMMUNITY

1	library	6	supermarket
2	social/recreation centre	7	stores
3	church	8	seniors club
4	school	9	theatre
5	bank	10	medical clinic

West Side of the Street

East Side of the Street

Figure 9: STREET ELEVATIONS

COSTS & MARKETING

House Construction

Roof

Interlocking asphalt shingles
10 mm (3/8") plywood sheathing
Mono-trusses @ 600 o.c.
R.S.I. 7 (R40) loosefill insulation
6 mil poly vapour barrier
13 mm (1/2") gypsum board
Aluminum soffit, fascia, eavestrough

Exterior Walls

Prefinished aluminum siding
Tyvek
10 mm (3/8") plywood sheathing
38 mm x 135 mm (2 x 6) wood studs
@ 400 mm o.c.
R.S.I. 3.5 (R20) Batt insulation
6 mil poly vapour barrier
13 mm (1/2") gypsum board

Interior Walls

13 mm (1/2") gypsum board
38 mm x 89 mm (2 x 4) wood studs
@ 400 mm o.c.

Main Floor with Crawlspace

Finished Floor
19 mm (3/4") T. & G. Ply
38 mm x 190 mm (2 x 8) fir joists
@ 400 mm o.c.
4 - 38 mm x 235 mm (2 x 10)
built up beams
Teleposts on concrete footings

Crawlspace Walls

Poured concrete footing
100 mm (4") plastic weeping pipe
300 mm (12") crushed gravel cover
50 mm (2") rigid insulation
200 mm (8") reinforced concrete

Basement Walls

Poured concrete footing
100 mm (4") plastic weeping pipe
300 mm (12") crushed gravel cover
Asphaltic damproofing
200 mm (8") reinforced concrete
6 mil poly
38 mm x 89 mm (2 x 10) wood studs
@ 400 mm o.c.
R.S.I. 2.1 (R12) Batt insulation
6 mil poly vapour barrier

Basement Floor

100 mm (4") poured concrete slab
6 mil poly moisture barrier
100 mm (4") sand or gravel bed

CONSTRUCTION COST ESTIMATES *

	Seniors Semi-Detached Bungalow		Conventional Semi-Detached Bungalow	
	With Bsmt	No Bsmt	With Bsmt	No Bsmt
1. Excavation	1,350	625	1,350	625
2. Concrete	4,250	2,675	4,250	2,675
3. Damproofing	325	325	325	325
4. Siding	1,375	1,375	1,375	1,375
5. Roofing	900	900	900	900
6. Carpentry-rough	5,250	4,850	5,250	4,850
7. Carpentry- Finished	750	550	750	550
8. Windows & Glazing	1,950	1,950	1,550	1,550
9. Sealants				
10. Doors	925	925	925	925
11. Hardware	300	300	125	125
12. Tiling	200	200	200	200
13. Wallboard & Insulation	2,350	2,350	2,350	2,350
14. Flooring	2,000 ±	2,000 ±	2,000 ±	2,000 ±
15. Painting	1,150	1,100	1,150	1,100
16. Fittings	3,000	3,000	2,175 +	2,175 +
17. Specialties	500 ±	500 ±	250	250
18. Appliances	1,100 ±	1,100 ±	1,100 ±	1,100 ±
19. Plumbing	2,450 +	2,450 +	2,000	2,000
20. Heating	1,700 +	1,700 +	1,700	1,700
21. Electrical	2,000	2,000	1,600	1,600
22. Landscaping	1,500 ±	1,500 ±	750 +	750 +
23. Site Overhead	3,925	3,625	3,075	2,825
Total Construction Cost	$39,250	$36,000	$35,150	31,950
Cost per square mtr.	$467	$429	418	$380
Cost per square ft.	$43,60	$40,00	$39,05	$35,50

* The estimate covers the hard construction costs for an 84 sq.m (900 sq.ft.) bungalow built in Calgary during 1984.

General Comments: While the seniors' home construction cost appears to be about 9% more expensive than a conventional home, there is also an inherent improvement in quality that jointly comes with improving the home's suitability for seniors. Additionally when other costs such as land are added to find the total cost, a special senior's home is only found to be about 6% higher in cost than the conventional home. The factors for this difference are a slight increase in material prices and a slightly higher quality of construction incorporated in these homes.

Detailed Comments Regarding the Construction Cost Estimates:

6. Carpentry - Full basement includes 2400 mm (8') studded walls.

9. Sealants - All caulking included in vapour barrier, window, and siding installation costs.

11. Hardware - Extra security locks and lever type handles included.

13. Wallboard - Cost to insulate full height basement walls is comparable to floor or exterior rigid wall insulation in basementless house.

15. Painting - Includes additional cost to finish stairs with non-slip surface in home with basement.

16. Fittings - Senior's home may require upgraded middle of the line cabinets with pull out drawers, shelves, etc. Standard home is priced with a near to basic line of cabinet.

17. Specialties - Senior's home may require stronger and therefore more expensive towel bars, etc. Grab bars and other aids may be installed now or later making this a very individually determined cost.

18. Appliances - Range and fridge included.

19. Plumbing - Lever-type taps are required for senior's home. Additional costs for other disability features may be required.

20. Heating - Special attention to heating may necessitate extra expense (to be determined).

21. Electrical - Seniors require special pull down fixtures and extra exterior lighting.

22. Landscaping - $750 represents the material cost for topsoil, sod, 2 trees, shrubs and concrete walk. Seniors have additional requirements as outlined in recommendations and may require labour as well. Costs could vary from $1000 - $3000 + depending on existence of trees, fences, etc. on lot and requirements.

23. Site Overhead
    - Building permits and miscellaneous site costs, $500.
    - General contractor's overhead and profit of 8% of construction cost for standard home. 10% of construction cost for seniors home due to increased attention required for special details.

Alberta Construction Costs

(Alberta Department of Housing - 1984 House Cost Comparison Study)

	Calgary	Edmonton	Red Deer	Fort McMurray	Grande Prairie	Hinton	Lethbridge	Medicine Hat
Construction Cost Ratios	1.00	1.01	1.03	1.27	1.20	1.17	1.09	1.12
Single-detached dwelling with basement	$35,529	35,764	36,540	45,129	42,601	41,421	38,733	39,743

Additional Development Costs

Each building project, whether in a small town, city or rural location, will have some or all of these additional costs.

- Removal of existing house in old neighbourhood if necessary 1,500
- Extra cost to connect municipal sewer and water service in older neighbourhoods may exist. In Calgary this cost is as follows:
  Semi-detached house: 3,500
  Single-detached house: 5,500
- Gas connection in older neighbourhood may be extra charge ?
- Legal fees 500
- Land value (ranging from rural to prime urban property) $10,000 - $40,000+
- Realtor(s) Fees, approximately 6% of home construction cost $2,000 - $2,500
- A general contractor may further be hired to arrange any or all of these additional matters, at negotiated cost.

Operating & Maintenance Costs

	900 sq.ft. bungalow (as shown in plans), built in 1985 on a small lot.	Labour	Material	1200 sq.ft. 1½ or 2 storey home built about 1945 on a 50' by 120' property.	Labour	Material
Interior Home Maintenance	New and modern products should require negligible maintenance. Painting every 4-5 years is the major expected expense.	5 hrs.	$30.	The house is old requiring periodic attention to plumbing, electrical, heating, & other renovations & repairs. Painting is an additional expense.	12 hrs.	$100.
Heating and Hot Water	R20 Walls, R40 Roof, R20 Floor (if no bsmt.), Tightly sealed. Nat. Gas use/year= 30,000 cu.ft. $2.50/1000 + $120./yr. service charge.	/	$195.	R7 Walls, R10 Roof, no insulation in floor or bsmt. Unsealed. Nat. Gas use/year= 135,000 cu.ft. $2.50/1000 + $120./yr. service charge.	/	$455.
Electric Utilities	10,000 KWH/year @ 4.2¢/KWH plus $75./yr. service charge.	/	$495.	The same.	/	$495.
Home & Garden Water	Less yard to water. 130 cu.mtrs./yr. @ 30¢/cu.mtr., + service charge $90./year, + sewage charge = 71% of total.	/	$220.	Large yard to water increases cost 10% per year.	/	$240.
Exterior Home Maintenance	Very little or no maintenance required with modern low maintenance materials.	2 hrs.	$10.	Wood siding and trim requires repair and painting every 4-5 years.	10 hrs.	$50.
Yard Maintenance	Small yard and low care landscaping reduce work. Snow shovelling and grass cutting.	20 hrs.	$20.	Large yard to care for. Snow shovelling and large lawns to cut. (2½ x as large).	50 hrs	$30.
Home Insurance	Replacement coverage for house and contents.	/	$185.	Larger house costs more to replace if burned.	/	$215.
Taxes	New smaller home on smaller property.	/	$650.	Large old home on larger property.	/	$650.
	Totals	27 hrs.	$1805.		72 hrs.	$2235.

Hired labour costs approximately $15 per hour. The work noted above could be hired-out for cost of 27 x $15 = $405.00 or $34 per month for home maintenance. A Calgary survey found that about 70% of seniors were prepared to pay this amount or more for home maintenance assistance.

Comparison of Housing Alternatives

(Hillhurst/Sunnyside - Calgary 1984)

Notes: Very little or no smaller homes have been built recently (last 15 - 20 years) in typical older areas. Recent rebuilds are generally houses above (1300 sq. ft.) 120 sq. m. and 2 storeys, or apartments.

Seniors with few assets would not be likely to choose a poor rental apartment. They could get a better quality government subsidized apartment for the same cost.

Type of Housing	Area Sq.M.(Sq.Ft.)	Age in Yrs.	Condition	Total Cost	Rent/Yr.	Maintenance & Operating Costs/Yr.	Physical Suitability for Seniors
Seniors Single Detached Bungalow	84 (900)	New	Excellent	$70-80,000	-	$2,200	Excellent
Seniors Semi-Detached Bungalow	84 (900)	New	Excellent	$65-75,000	-	$2,200	Excellent
Conventional Single Detached Bungalow	80-90 (860-970)	25+	Poor to Good	$60-70,000 $75-85,000	- -	$3,500 $2,500 $2,500	Poor to Good
Condominium Townhouse	85-110 (910-1180)	2-8	Good to Excellent	$75-100,000	-	$2,000- $2,500	Good
Condominium Apartment	65-105 (700-1140)	2-8	Good to Excellent	$40-75,000	-	$1,800- $2,000	Fair To Good
Private Bungalow Rental	70-90 (760-970)	25-50 25-50	Poor to Fair	-	$5,000 $7,000	$3,500 $3,000	Poor to Good
Private Apt. Rental	45-80	2-20	Fair to Good	- -	$4,000 $6,000	$1,100	Fair to Good
Alta Govt. Apt. Rental	46 (500)	New	Excellent	$6,600 * to $3,400 *	$1,800 to $5,000	$2,000 *	Excellent
Extended Care Home	(Room)		Good to Excellent	$13,000 * to $37,000 *	$4,000 (incl. food)	(incl. in rent)	Excellent

* Gov't Assisted Cost Per Year

Marketing Considerations

Design: The homes in this guidebook reflect seniors' housing preferences. In addition to catering directly to the general stated needs and desires, these homes have been designed to allow for flexibility to suit each owner's particular needs. This flexibility in new house design and options is very important today in order to maximize purchases.

While all of the design features mentioned in this booklet do not have to be installed initially in the homes, it is important that adaptation is possible when the need arises.

The Market:

		Year	Pop.	Age	% of Total Pop.
Alberta Population		1984	180,000	over 65	7.4%
		2000	280,000	over 65	7.6%
Canada Population		1984	23.5% min.	over 65	10.0%
		2000	23.7% min.	over 65	14.0%
1984: older adults (Calgary)	Single		5%	Live Alone	27%
	Married		73%	2 people	65%
	Divorced		3%	3 people	5%
	Widowed		19%	4 people	3%
			100%		100%

Financial Status of Alberta Seniors & Pre-Retirees:

Minimum guaranteed income for Alberta Pensioners

	Single Person	Married Couple
Jan. 1983	$7,172	$12,959

The average Alberta pensioner's total income is approximately $14,500/yr.

Average Net Worth of Households in Canada

Over 65 yrs.	$47,074	These figures are higher in Alberta; also homeowners assets are higher.
45 - 54 yrs.	$74,405	The most valuable asset is ones home.

Average homeowners equity in their home for Canadians over 65 was in excess of $55,000 in 1982 (higher in Alberta).

Market Potential:

All persons contacted during the study have been very positive about the market potential for the homes illustrated here. These opinions are to be valued since they are from people who are involved everyday with seniors and/or the home marketplace.

Additionally we have collected survey and statistical information to test the market potential and demand for this type of housing. According to this information, about 40 - 45,000 units will be required over the next 30 years to service our senior population. As 67% have stated a preference for owned housing in retirement, this would translate to approximately 28,000 homes. Based on ownership accommodation preferences in Calgary, the projected Alberta housing requirements are as follows:

Single detached homes	61 %	17,400
Apartment condo	23 %	6,600
Row House	7 %	2,000
Duplex (up/down)	1 1/2%	400
Semi-detached (side by side)	not surveyed	
Miscellaneous	7 1/2%	2,100
Total	100 %	28,500

Affordability:

The affordability of homes must be assessed in terms of available assets and income in retirement. It is assumed that most homeowning seniors would be willing to trade only the equity in their present home for purchasing another home. The average equity in a home for a senior in Canada is $55,000+, but should be somewhat higher in Alberta (higher also for the 55 - 65 group). The new homes illustrated here range between $50-$75,000 from rural to city locations. This appears to be generally in line with the financial capability of Alberta senior homeowners.

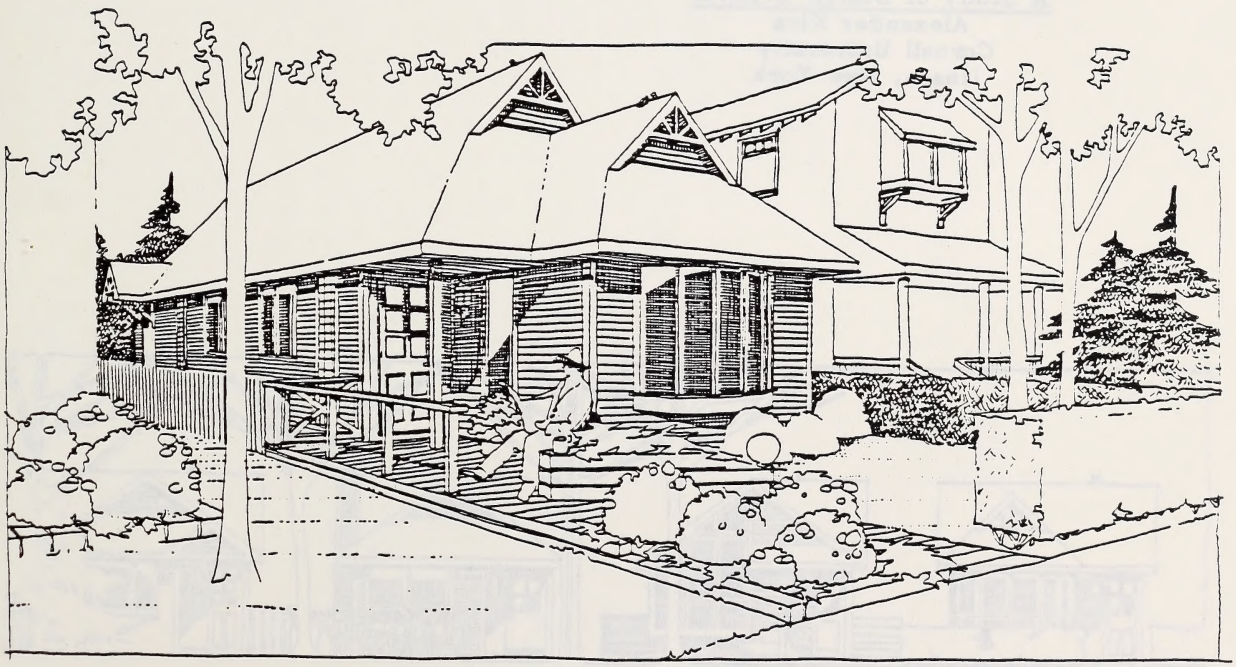
Another factor to be looked at in this regard is what Albertans are willing to pay for this type of housing. In Calgary the following amounts are considerably over the $55,000 average equity amount. This indicates that Alberta seniors have considerably more assets than the average Canadian, and are therefore able to expend more to meet their independent housing needs, though what they expect for their money is uncertain.

Willing to pay		- 40,000	5%
for home: 1984	$40	- 50,000	9%
(Calgary survey)	50	- 60,000	10%
	60	- 70,000	17%
	70	- 80,000	29%
	80	-100,000	22%
		$100,000 +	7%
			100%

Future Resale of Home:

At the moment there are about 180,000 people over 65 in Alberta and very few or no homes of this type built especially for them. If the home is built well, and attractively, it will be no problem to sell since many seniors have stated a preference for this type of home. Due to the post war baby boom and longer life expectancies there will be 280,000 people over 65 in Alberta by the year 2000; the selling market will nearly double in the next 16 years! In addition, all the example homes have been designed for appeal to single persons also, or can be converted very easily by a young family to 125 sq.m (1350 sq.ft.), so there are two other markets for resale.

Despite the foregoing optimism, the home marketplace is not always a sure thing. As seen recently (1983, '84) in Alberta urban centres, economic conditions have caused home prices to drop considerably making purchasers wary and scarce.



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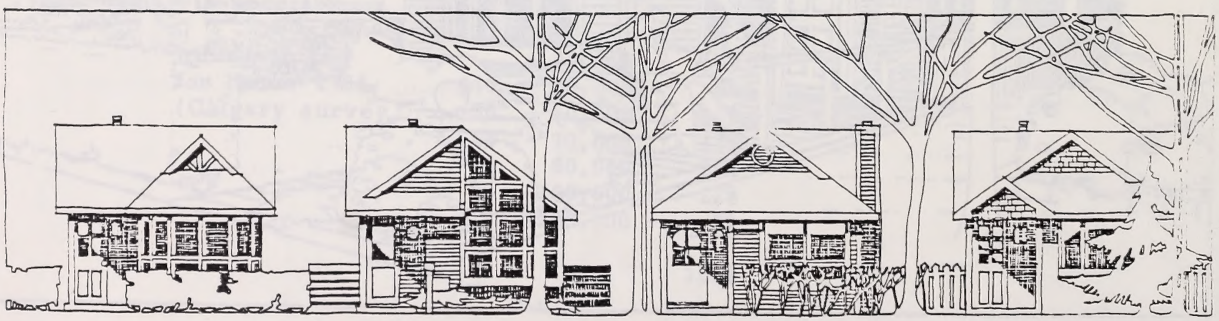

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